

**STS CONSULTANTS, LTD.**



**Edina OPCJ Test Well**

Minnesota Pollution Control Agency  
St. Paul, MN

STS Project 200605032

June 29, 2007

EPA Region 5 Records Ctr.



300539



THE INFRASTRUCTURE IMPERATIVE



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June 29, 2007

Mr. Nile Fellows  
Project Manager  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, MN 55155

Re: Construction and Testing of the Edina OPCJ Test Well; MPCA W.O. SFST0703;  
STS Project No. 200605032

Dear Mr. Fellows:

STS is pleased to present you with the report describing the construction and testing of the Edina OPCJ Test Well. This project was authorized by the MPCA Work Order No. SFST0703 issued on July 26, 2006 and Work Amendment No. 1 signed on January 2, 2007. The July 26, 06 Work Order authorized Tasks 1001 (Specs, RFP, Bidding and Contractor Selection), 1002 (Borehole Drilling, Well Installation) and 1003 (Report). Work Amendment No. 1 authorized Task 1004 (Testing the Edina OPCJ Test Well / monitoring Meadowbrook Golf Course Well).

This report describes and documents the entire work performed during this project, including the bidding process, well construction, development and testing, and the results of the tests conducted on the completed Edina OPCJ Test Well. This report is a continuation of the City of Edina Well No. 7 Study (see the reports: STS, March 3, 2005, June 30, 2005 and June 30, 2006).

If you have any questions, please contact Peter Rzepecki at 763-315-6345 or Paul Putzier at 763-315-6304.

STS CONSULTANTS, LTD.

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PTR/sks  
Encs.



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## **1.0 INTRODUCTION**

Vinyl chloride contamination was detected in recent years in the City of Edina Municipal Well No. 7 (ED-7). In 2002 the vinyl chloride concentrations measured in the well samples exceeded the Minnesota drinking water standard. Consequently, the well was shut down and environmental investigation was initiated to determine the source and extent of the groundwater contamination.

Detailed account of the work performed to date is presented in the reports listed in Section 8 – References.

One of the recommendations included in the Phase III report (STS, June 30, 2006) was to install a Prairie du Chien – Jordan (OPCJ) monitoring/test well west of ED-7. The purpose of the well was defined as follows:

- To determine if VOC contamination is present in the OPCJ aquifer in the western part of the City of Edina. All the OPCJ wells west and southwest of ED-7 within the city limits, except the municipal well Edina 16, are completed in the top portion of the Prairie du Chien formation. This top portion is above the identified contaminated zone within the aquifer. Thus, testing these wells did not provide the much needed data. It was concluded that constructing a well penetrating deeper portions of the OPCJ formation would greatly contribute to the knowledge of the extent of the groundwater contamination in that area. The City of Edina may use the information obtained from this well to plan construction of an additional water supply well in the west / southwest area of the city. As indicated in the recent STS report (City of Edina Well No. 7 Study – Phase III Report, STS Project No. 99613-XC), the VOC plume present in this aquifer over a large area of St. Louis Park, eastern Hopkins and northern Edina was not well delineated in the south-western direction.
- To allow a series of tests designed to learn more about the groundwater flow system within the OPCJ formation. Some of can be economically carried out only in a small diameter open hole. Large diameter holes (like ED-7) require expensive packers. Previous efforts to measure vertical groundwater flow in ED-7 were not successful, possibly because water was moving at velocity below the sensitivity threshold of the instrument (impeller). The proposed test well, along with ED-7 and Meadowbrook Golf Course Well, would provide three monitoring points, and continuous water level

measurements. Data collected from these three monitoring points would allow analysis of the changing hydraulic gradient in OPCJ aquifer. Preliminary water level observations strongly suggest that during summer time the contaminated groundwater flows from the St. Louis Park area toward several of the Edina municipal wells. Additional knowledge about the groundwater flow system within OPCJ is much needed for water resource and remedial action planning.



## **2.0 TEST WELL LOCATION SELECTION**

MPCA authorized the installation of the new test well based on the recommendations from STS. The Test Well location at Dundee Road and Vernon Ave. S. was selected from several alternatives proposed by the City of Edina. The Test Well is the property of the Minnesota Pollution Control Agency (MPCA). The lot where the Test Well was constructed is the property of the City of Edina (see Access Agreement between MPCA and the City of Edina included as Appendix A).

### **3.0 DEVELOPMENT OF PLANS AND SPECIFICATIONS REQUEST FOR PROPOSAL, BIDDING AND SELECTION OF CONTRACTORS**

STS developed Plans and Specifications for the construction of the Prairie du Chien – Jordan monitoring/test well (Test Well). The Plans and Specifications were included in the Request for Proposal (RFP) package. The RFP was announced on the Minnesota Department of Administration (MDA) – Materials Management Division Solicitation Posting website. Next, STS administered the bidding process in coordination with and on behalf of the Minnesota Pollution Control Agency (MPCA). The interested bidders received the bidding package. By May 29, 2006, the proposal submission deadline, STS received proposals from four contracting firms. The MPCA selected Traut Hydro-Tech for the Test Well construction of the well.

STS prepared another RFP in February 2007, for Geophysical Logging and Discrete Sampling of the Test Well and sent it to three contractors known to be qualified to conduct the requested work. The process of identifying potential contractors for this work included searching for qualified Targeted Group (TG) and Economically Disadvantaged (ED) Vendors using the TG/ED List posted on the MDA – Materials Management Division Solicitation Posting website. By February 27, 2007, the proposal submission deadline, STS received two proposals. MPCA selected Downhole Well Services, LLC.

#### **4.0 BOREHOLE DRILLING, WELL CONSTRUCTION AND DEVELOPMENT**

After obtaining the necessary permits from the Minnesota Department of Health (MDH), Traut Hydro-Tech started borehole drilling on November 27, 2006. The drilling was conducted using mud-rotary technique. The first, exploratory phase of the drilling was conducted using a 6" diameter bit to determine if Platteville and Glenwood formations were present. If present, the well would be double cased, to prevent mixing of Drift and Platteville ground water with St. Peter ground water. The Platteville and Glenwood formations were not encountered and the drilling continued with the six inch bit to the top of Prairie du Chien formation at 267 feet. The drilling continued for another four feet and was terminated 271 feet below ground surface on November 28, 2007. On November 29, 2007, the borehole was reamed with a ten inch diameter bit. On that same day, a six inch diameter stainless steel casing was installed in the borehole and the annular space between the casing and the rock formation was grouted with neat cement. In total, four yards of grout was installed in the borehole. The drilling operations were, then, postponed for five days to allow for the grout to cure.

During the initial phase of drilling, 3,000 gallons of water and twenty-two 50-pound bags of SUPER GEL were used for production of the drilling mud, most of which was lost to the formation during the drilling. The water was obtained from the nearby city fire hydrant. No soil/rock samples were collected for identification of geological formations. Observation of the drilling cuttings recovered from the circulating mud and the rig performance during drilling indicate that the Drift formation rests directly on the St. Peter Sandstone at a depth of 132 feet.

On December 4, 2007, the second phase of drilling started, utilizing a drilling air rotary technique. The drilling was conducted using air hammer. First, the drilling was conducted through the grout plug encountered at a depth of 140 feet. Next, the drilling continued through the Prairie du Chien formation to create a six- inch diameter open hole. During the drilling, 600 cubic feet of air per minute was applied into the drilling column. As a result of the air injection, about 100 to 200 gallons of water per minute was discharging from the well. The drilling continued through December 5 and December 6, 2007. The Jordan formation was encountered at 391 feet and the drilling was terminated at a depth of 461 feet below ground surface.

Upon completion of drilling on December 6, 2007, air was injected into the open hole section of the well for five more hours, as part of the well development. The following day, December 7, 2006, well development continued. A field technician subcontracted by Traut Hydro-Tech from Pace Analytical conducted monitoring of Nephelometric Turbidity Units (NTU) count in the samples collected from the well to document if the well could be considered developed. The following measurements were taken:

Time	NTU Readings
10:00 AM	38.11
10:30 AM	3.31
11:00 AM	3.18
11:30 AM	8.31
11:33 AM	4.62

The fluctuations in the later NTU readings were interpreted as a result of the compressor's changing rate of air injection. Based on these readings, it was concluded that the well was sufficiently developed.

On May 10, 2007, Traut Hydro-Tech completed the site clean-up (removal of soil and rock cuttings derived from the drilling operations), grading and landscaping.

On May 31, 2007, Traut Hydro-Tech installed a modified well casing cap to allow installation of a transducer, Level Troll 500 sensor, and the cable, "RuggedCable™", which is suspending the sensor, for continuous monitoring of water level.

The well construction was completed by installing a ten inch diameter protective casing. The end of the RuggedCable™ is stored within the well's protective casing.

The Test Well was assigned the Minnesota Unique Number 748656. Its installation details are presented on Figure 1. Also, see photographs included in Appendix G.

## **5.0 WELL TESTING, DISCRETE SAMPLING AND WATER LEVEL MONITORING**

Once the Test Well was installed and developed, it was subject to several tests, ground water sampling and continuous water level monitoring as described in the following sub-sections.

### **5.1 HydroLab Profiling**

On January 2, 2007, Jim Lundy and Steve Robertson of the Minnesota Department of Health (MDH) conducted a HydroLab profiling using the HydroLab Minisonde 3A. This profiling involved continuous measurements of conductivity, pH, dissolved oxygen and temperature. The results are presented on the figure "Water Quality Indicator Parameters" provided in Appendix B – Downhole Geophysical Logging Results. Some technical difficulties (computer battery gave out at a depth of about 420 ft) resulted in spurious data spikes of pH and DO. The main anomaly observed is at 300 ft, which correlates well with the fluid resistivity data (see Section 4.4 and Appendix B). Mr. Robertson postulated that the test should be repeated in the future.

For comparison, Appendix B also includes the results of the HydroLab profiling conducted in 2005 on the other, two nearby OPCJ wells: Edina Well No. 7 (0.78 mile or about 4,100 ft east-northeast of the Test Well) and Meadowbrook Golf Course Well in 2005 (1.55 mile or about 8,200 ft to the north of the Test Well).

### **5.2 Televideo Logging**

On January 3, 2007, Pat Sarafolean of the MDH conducted tele-video logging of the Test Well. The DVD with the video is provided in Appendix B – Downhole Geophysical Logging Results.

### **5.3 Flowmeter and Caliper Logging**

On January 8, 2007, Robert Tipping of the Minnesota Geological Survey (MGS) conducted flow logging of the Test Well with the use of an electromagnetic flow meter (E-M Flowmeter)(from Century Geophysical Corp., Tulsa, OK). The aim of logging was to

detect and measure vertical groundwater flow within the Test Well's open hole section. Caliper logging was conducted with the use of a 3-arm caliper probe (2PCA-1000). The flow log and caliper log of the well are presented in Appendix B – Downhole Geophysical Logging Results.

The flowmeter logging revealed a strong downward flow of ground water from below the casing that exceeded the capacity of the flowmeter tool. According to a preliminary interpretation by Robert Tipping, groundwater enters the well's borehole through bedding plane fractures at about 274 ft at sandstone/carbonate contact within the Shakopee formation (not the St. Peter – Prairie du Chien contact that was found at 267 ft) and travels down the hole at the rate exceeding 15 gpm. Some water might also be entering through vugs just below the casing at 272.4 ft. Additional water is entering the borehole at a vuggy interval between 297 ft and 301.5 ft and also at 310.5 ft. Some of the water is possibly leaving the borehole through vuggy interval at 325 ft to 329 ft. However, much of the water continues traveling down the hole till it reaches another vuggy interval from 370 ft to 387 ft. A much smoother borehole from 340 ft to 370 ft indicates the presence of Oneota dolomite.

Jordan sandstone is encountered at 391 ft. Groundwater flowing downward within the borehole gradually enters the Jordan formation through inter-granular spaces, except for abrupt loss through a bedding plane fracture at 431.7 ft, and possibly through bedding plane fractures near the bottom of the well.

The strong down-hole flow in the Test Well may be due to pumping from a nearby well. The flowmeter logging should be, therefore, repeated at the time when pumping from the nearby wells is controlled.

#### **5.4 Geophysical Logging**

On April 5, 2007, James Tranen of Downhole Well Services, Inc. conducted geophysical logging of the Test Well, including: single point resistance, spontaneous potential, temperature, fluid resistivity, normal resistivity and natural gamma. The geophysical equipment used included a normal resistivity probe (2PEA-1000), a temperature and fluid resistivity probe (2PFA, 2SFA,B,2WQA-1000), and a gamma, spontaneous potential, single potential resistance probe (2PGA-1000) (all probes from Mount Sporis Instrument

Co., Inc., Golden CO). The logs are presented in Appendix B – Downhole Geophysical Logging Results.

### **5.5 Discrete Sampling**

On April 5, 2007, following geophysical logging, James Traen of Downhole Well Services, Inc. and STS staff conducted discrete groundwater sampling with the use of 1-liter discrete sampler manufactured by the Century Geophysical Corporation, Tulsa, OK). The samples were collected from four depths: 280, 330, 400 and 440 feet below the top of casing. Four types of samples were collected from each of these depths: metals, general chemistry, VOC and tritium. In the field groundwater pH, redox potential and specific conductance were measured. The collected metal and general chemistry samples were sent for analysis to Pace Laboratory. VOC samples were sent for analysis to the MDH chemical laboratory. Tritium samples were also delivered to the MDH laboratory, but these samples were further sent to Environmental Isotope Laboratory, University of Waterloo, Canada. Sampling Information Forms, chains of custody and laboratory reports/data are presented in Appendices C (VOC Laboratory Analysis Report – Minnesota Department of Health Laboratory) and D (General Chemistry Analysis Report – Pace Laboratory). General chemistry analysis results are presented in Table 1.

An important finding of this discrete sampling is that no volatile organic compounds (VOCs) were found in any of the four discrete samples, except for trace amount of Toluene. Thus, the Test Well is located outside, or right at the south-southwest boundary of the large, three-mile diameter, VOC groundwater plume centered on the south part of St. Louis Park. That plume, contaminates the OPCJ aquifer system, which is the major water supply source for the area.

### **5.6 Continuous Water Level Monitoring**

On June 6, 2007, STS staff installed a Level TROLL 500 transducer in the Test Well and initiated measurements of water levels every 15 minutes. The equipment vendor sent a short RuggedCable™, and the transducer was installed only about eight feet below the water level. By June 10, 2007, the water level dropped below the transducer's sensor. The extended cable was sent and transducer installed at sufficient depth on June 20, 2007. Since then, water level has been monitored in the Test Well without interruptions.



The Test Well became the third OPCJ well in the area where continuous water level monitoring is taking place – the other two are the Edina Municipal Well No. 7 (monitoring conducted by MDH) and Meadowbrook Golf Course Well (monitoring conducted by STS on behalf of MPCA). All the currently available data are presented on hydrographs included in Appendix E. The hydrographs show the following:

- Figure 1, demonstrates the presence of the distinct annual cycles of water levels that are lowest during summer time, when the water demand is the highest.
- Figure 2, shows water levels monitored in June 2007 in two wells: the Meadowbrook Golf Course Well and the Test Well. As can be seen, hydraulic gradients change with time – at the beginning of June water level in the Test Well was lower than in the Meadowbrook Golf Course Well. In late June the situation was opposite, with water levels lower in the Meadowbrook Golf Course Well.
- Figures 3 and 4, illustrate changing water levels in the Meadowbrook Golf Course and Test wells, measured in June 21 and 22, 2007. Edina Well No. 15 was pumped for 12 hours during those days to observe the influence of that pumping on water levels in the two wells (see discussion in the Section 4.7).

#### **5.7 Monitoring Response of Water Levels in the Test Well and the Meadowbrook Golf Course Well to Pumping from the Edina Municipal Well No. 15**

The City of Edina pumped the Edina Municipal Well No. 15 (ED-15) at the rate of 950 gpm for a period of 12 hrs, on June 21, 2007, at the request of STS. The purpose was to observe the reaction of water levels in the Test Well and the Meadowbrook Golf Course Well to the pumping. ED-15 was the only Edina municipal well pumped during that time. The pumping was started at 4:53PM, June 21, 2007 and was terminated at 4:53AM, June 22, 2007. The pumping was preceded by a period of a complete non-pumping from any of the other Edina municipal wells. The non-pumping period started at 9:30AM, June 21, 2007 and was terminated at the start of the ED-15 pumping test (4:53PM, June 21, 2007). During the following 12 hours of pumping from ED-15, no other Edina municipal well was pumping.



The non-pumping period triggered a recovery of water levels in the area, as Figure 4, Appendix E, demonstrates. The non-pumping (or resting) period is marked on that figure with the yellow line. This "sub-regional" water level recovery continued well into a period of pumping from ED-15. On Figure 4, the period of pumping from ED-15 is marked with the light blue line. Therefore, water level data collected during the ED-15 pumping period could not be used to perform aquifer test analysis because two opposing trends influenced the rate of change in water level: recovery of the sub-regional cone of depression and formation of a smaller cone of depression centered around ED-15. Separation of these two influences, necessary for quantitative analysis of the data, was not possible.

Nonetheless, an attempt was made to analyze the recovery data (data collected after the ED-15 pumping ceased). It was assumed that by the end of the ED-15 pumping period, recovery of the semi-regional cone of depression would be mostly done or insignificant. The recovery period data collected from the Test Well and the Meadowbrook Golf Course Well were processed and analyzed using the Theis's Recovery Method.

The water level data, the data processing and analysis are presented in Appendix F. The analysis were conducted under assumption that water level changes observed in the two wells during the first four hours after the end of pumping from ED-15 were the result of recovery of cone of depression caused by pumping from ED-15. Yet, judging by analysis of the hydrographs presented on figures in Appendix E, it is very likely that other factors also influenced these water levels. This is particularly likely for two reasons:

- There was no coordination of pumping from municipal wells located in other cities (a difficult task to accomplish).
- Both wells are located a considerable distance away from the ED-15 (Test Well – about 3,800 ft; Meadowbrook Golf Course Well – about 4,400 ft).

It was not possible to identify, separate and trace these other influences. The analyst also made an assumption as to the static water level in each well needed to calculate drawdowns (see explanations in Table in Appendix F).

The estimates of the OPCJ aquifer system transmissivity are:



- 219,300 gpd/ft based on the Test Well data
- 84,800 gpd/ft based on the Meadowbrook Golf Course Well data

These transmissivity estimates were compared to the results of the sixteen OPCJ aquifer tests performed in the south-east portion of the Hennepin County (see STS, June 30, 2006b, Table 3-5 for summary of this data). The first estimate (obtained using the Test Well data) would be the second highest value among these tests. The second estimate (obtained using the Meadowbrook Golf Course Well data) would rank 7<sup>th</sup> from the highest value on that list of 16 (+1) aquifer tests.

The results of the aquifer test calculations and the calculated transmissivity values should be considered a wide approximation. This is because of the significant uncertainties as to the correctness of the above discussed assumptions. We postulate that a longer resting period prior to conducting a pumping test is needed to reduce uncertainties and provide a more reliable analysis. The longest possible resting period would be possible during winter months.



## **6.0 DISCUSSION AND RECOMMENDATIONS**

The collected chemical, geophysical and geological data presented in this report, along with similar data collected in the past for the Edina Well No. 7 and Meadowbrook Golf Course Well (STS, March 3, 2005; STS, June 30, 2005; STS, March 13, 2006; STS, June 30, 2006a; STS June 30, 2007) will be subject to detailed analyses and interpretations carried out by a team of groundwater professionals from MPCA, MDH, MGS and STS. This interpretative work will commence after the remaining data (tritium analysis) are received by STS and after additional testing and monitoring is conducted, as recommended below. The results of these efforts will be discussed in the 2008 report issued at the conclusion of the proposed follow up project – the St. Louis Park / Edina Groundwater VOC Contamination Study – Phase IV.

A pumping test using ED-15 should be repeated during winter months. The resting period should be extended to at least 12 hours. An attempt should be made to coordinate with the cities of St. Louis Park, Hopkins, Minnetonka and Edina to assure that none of the neighboring cities pump any municipal wells during the resting period. The 12-hour resting period during the winter months would more likely result in significant recovery of the “semi-regional” cone of depression. This recovery is important to avoid interference with cone of depression developing as a result of pumping from one well (ED-15).

It is recommended that before and during the ED-15 pumping test, flowmeter logging from the Test Well is repeated. The MGS staff declared willingness to conduct such a test.

The MDH staff suggested the need to repeat the HydroLab Profiling.

Continuous monitoring of water levels in the Test Well, Meadowbrook Golf Course Well and the Edina Well No. 7 should be carried on, particularly during the summer time. Preliminary data indicates that during the summer time the contaminated OPCJ aquifer groundwater is migrating from the area of St. Louis Park toward the municipal wells of the City of Edina (STS, June 30, 2006a; STS, June 30, 2006b). Continuous water level monitoring in the three wells will verify this preliminary finding.

The Test Well should be included as a permanent element of the St. Louis Park and Edina wells monitoring network, subject to at least once-a-year sampling for VOC analysis. It is important to monitor the existing VOC plumes and the contaminant concentration trends in the area (STS, June 30, 2007).

## **7.0 GENERAL QUALIFICATIONS**

STS professional services have been performed, findings obtained, and recommendations prepared in accordance with the generally accepted engineering and hydrogeologic principles and standard practices. No other warranty, either expressed or implied, is made. STS assumes no responsibility for data or interpretations made by others. STS accepts no responsibility for application or interpretation of the results by anyone other than the client.



## **8.0 REFERENCES**

STS, March 3, 2005. City of Edina Well No. 7 Study, July 2004 to March 2005 Preliminary Data Report. Prepared for the Minnesota Pollution Control Agency, STS Project 99613-XA.

STS, May 27, 2005. Land Use and Source Characterization Survey – Edina Well Evaluation. Prepared for the Minnesota Pollution Control Agency, STS Project 99613-XB.

STS, May 31, 2005. Reilly Tar Site / Meadowbrook Ground Water Model Set-up and Calibration Report. Prepared for the Minnesota Pollution Control Agency, STS Project 99330-XD.

STS, June 30, 2005. City of Edina Well No. 7 Study – Phase II Report, March 2005 to June 2005. Prepared for the Minnesota Pollution Control Agency, STS Project 99613-XB.

STS, March 13, 2006. St. Louis Park W437 Chlorinated Solvent Source Investigation. Prepared for the Minnesota Pollution Control Agency, STS Project 30055.

STS, June 30, 2006a. City of Edina Well No. 7 Study – Phase III Report, August 2005 to June 2006. Prepared for the Minnesota Pollution Control Agency, STS Project 99613-XC.

STS, June 30, 2006b. Reilly Tar Site / Meadowbrook Ground Water Model Expansion. Prepared for the Minnesota Pollution Control Agency, STS Project 99330-XF.

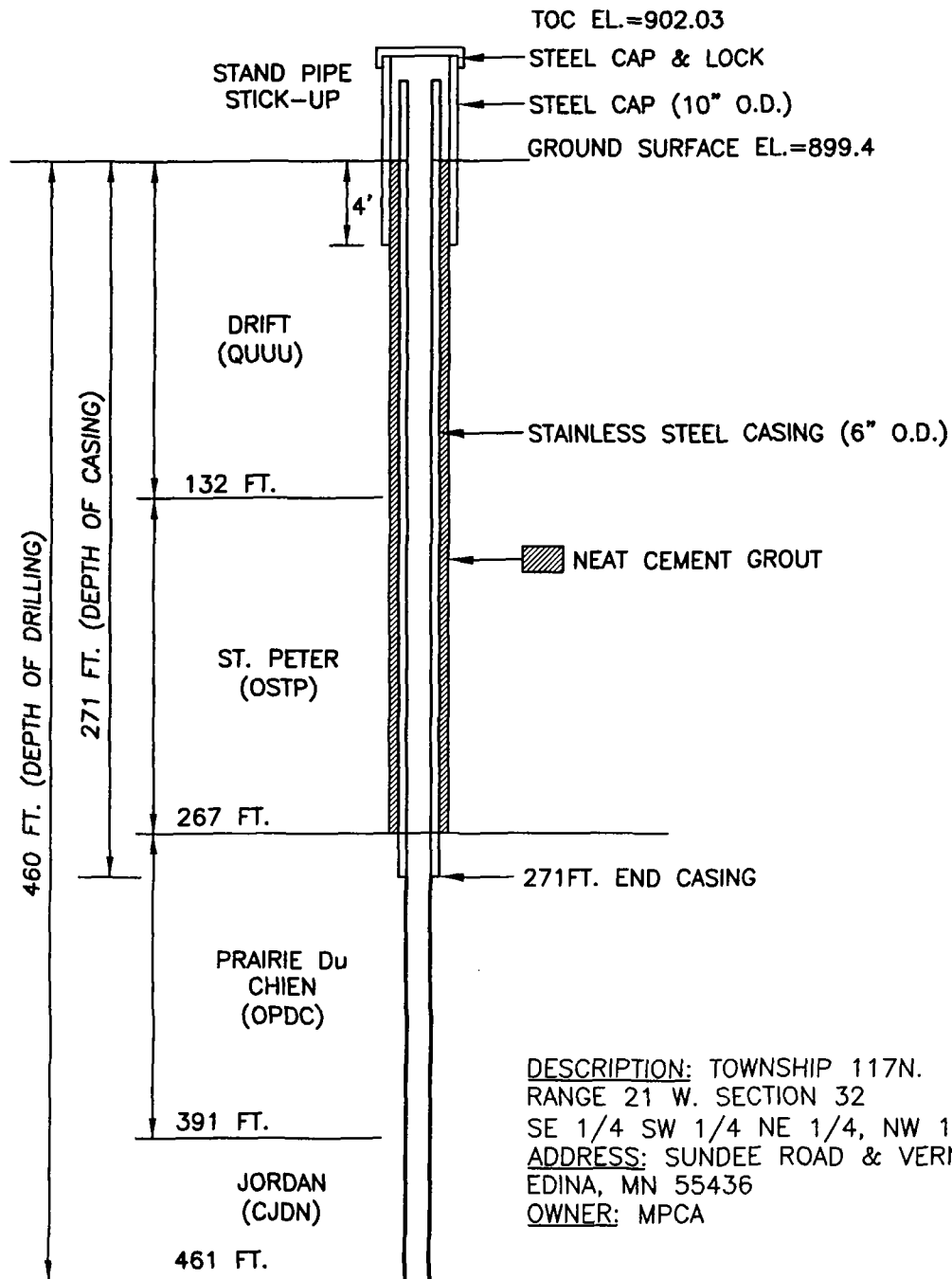
STS, June 30, 2007. St. Louis Park / Edina / Hopkins Groundwater VOC Contamination Study – 2006 / 2007. Prepared for the Minnesota Pollution Control Agency, STS Project 200701405.



THE  
INFRASTRUCTURE  
IMPERATIVE

Figures





DESCRIPTION: TOWNSHIP 117N.  
 RANGE 21 W. SECTION 32  
 SE 1/4 SW 1/4 NE 1/4, NW 1/4  
 ADDRESS: SUNDEE ROAD & VERNON S.,  
 EDINA, MN 55436  
 OWNER: MPCA

#### WATER LEVELS:

DEC. 19, 2006	12:29 PM	96.11 BELOW TOC
DEC. 27, 2006	1:37 PM	93.64 BELOW TOC

WELL No.: 00748656 DATE(S) INSTALLED: NOV. 27, 2006 TO DEC. 6, 2006

WELL DEVELOPED: DEC. 07, 2006 DRILLER: TROUT HYDRO-TECH

WELL LOG: PETER RZEPECKI (STS CONSULTANTS) STS JOB No.: 200605038



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FIELD WELL INSTALLATION DIAGRAM  
 EDINA OPCJ TEST WELL  
 DUNDEE ROAD & VERNON S.  
 EDINA, MINNESOTA  
 FOR: MPCA

Drawn:	TAK	1/01/2007
Checked:	PR	1/01/2007
Approved:	RLD	1/01/2006
PROJECT NUMBER	200605038	
FIGURE NUMBER	1	



THE  
INFRASTRUCTURE  
IMPERATIVE

Tables



Table 1 - Ground Water Analytical Results - General Chemistry  
Construction and testing of the Edina OPCJ Test Well.  
STS Project No. 200605032

Name		Test Well *	Test Well *	Test Well *	Test Well *	Edina 7 **	Edina 7 **	Edina 7 **	Edina 7 **	Mead. ***	Mead. ***	Mead. ***	Mead. ***
Unique #		00748656	00748656	00748656	00748656	00206474	00206474	00206474	00206474	00216009	00216009	00216009	00216009
Depth (ft)		280	330	400	440	360	400	450	500	280	330	380	425
Aquifer		OPCJ	OPCJ	OPCJ	OPCJ	OPCJ	OPCJ	OPCJ	OPCJ	OPCJ	OPCJ	OPCJ	OPCJ
Date		4/5/2007	4/5/2007	4/5/2007	4/5/2007	1/20/2005	1/20/2005	1/20/2005	1/20/2005	1/20/2005	1/20/2005	1/20/2005	1/20/2005
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Parameter	Units												
Calcium	ug/L	67000	66400	63600	65200	70900	102300	102200	103700	63900	65600	66500	67200
Iron	ug/L	875	784	933	744	1280	1270	1280	1050	2250	2290	2540	2390
Magnesium	ug/L	28600	28600	27200	28200	20700	35100	36000	34000	22300	24000	23600	23300
Potassium	ug/L	<2500	<2500	<2500	<2500	1700	2250	2100	2450	1470	1360	1510	1540
Sodium	ug/L	3030	3080	2930	3020	5600	25700	26200	25100	13400	13800	14500	14300
Aluminum	ug/L	<4.0	4.5	9.8	<4.0	7	9	4	8	8	3	8	4
Barium	ug/L	81.2	80.3	80.4	79.7	133	169	168	167	68	68	71	73
Lithium	ug/L	4.2	4.1	4.1	4.1	2.8	4.7	4.5	4.6	4.0	4.0	4.0	4.0
Manganese	ug/L	170	132	125	127	52.4	115.6	115.4	117.3	250.0	244.9	250.4	243.0
Silicon	ug/L	8770	8460	8440	8550	6400	10230	10280	9560	3230	3470	4110	4220
Strontium	ug/L	105	103	102	101	105	167	163	167	111	111	113	115
Alkalinity, Total	mg/L	328	316	314	315	269	331	335	330	240	250	248	248
Fluoride, Soluble	mg/L	0.15	0.21	0.16	0.16								
Chloride	mg/L	8.2	5.2	5.1	5.8	1.08	62.4	62.3	62	27.4	27.5	29.5	29.9
Nitrogen, Ammonia	mg/L	<0.50	<0.50	<0.50	1.6	0.647	0.500	0.473	0.493	0.500	0.487	0.486	0.492
Nitrate as N	mg/L	<0.10	0.12	<0.10	<0.10	0.009	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrite as N	mg/L	<0.10	<0.10	<0.10	<0.10	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phosphorus	mg/L	0.054	0.080	0.084	0.23								
Sulfate	mg/L	11.6	11.0	10.4	11.3	5.19	35.4	35.4	35.4	4.57	4.86	5.55	5.97
Bromide	mg/L	<0.25	<0.25	<0.25	<0.25	<0.002	0.100	0.105	0.100	0.154	0.141	0.145	0.154

Notes:

- J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
- \* - Edina OPCJ Test Well, Edina, MN
- \*\* - Edina Municipal Well No. 7, Edina, MN
- \*\*\* - Meadowbrook Golf Course Well, St. Louis Park, MN



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Appendix



## **APPENDICES**

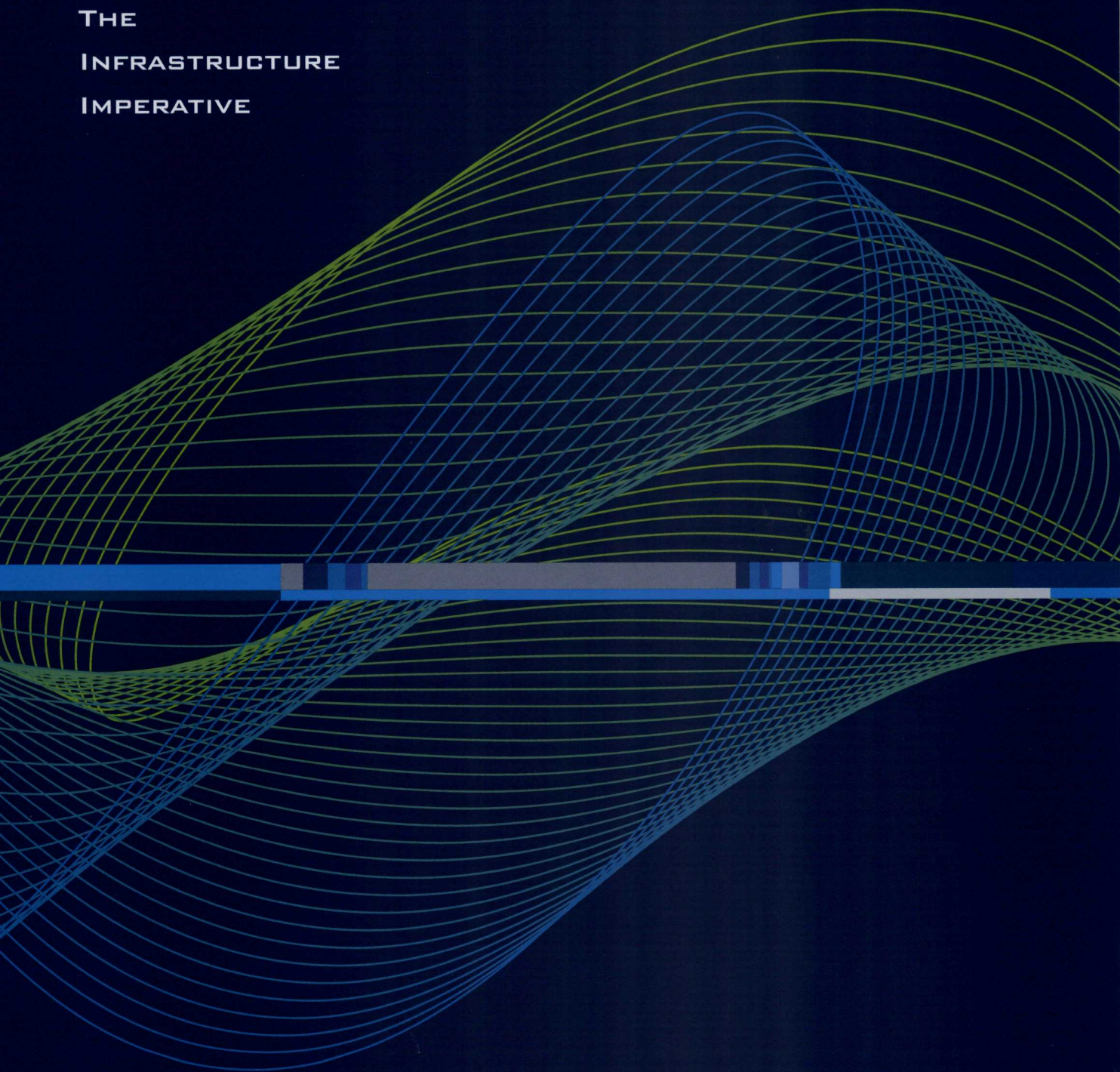
- A. Access Agreement between Minnesota Pollution Control Agency and the City of Edina
- B. Downhole Geophysical Logging Results
- C. VOC Laboratory Analysis Report – Minnesota Department of Health Laboratory
- D. General Chemistry Analysis Report – Pace Analytical
- E. Hydrographs for Meadowbrook Golf Course Well, Edina Well No. 7 and the Edina OPCJ Test Well
- F. ED-15 Pumping Test
- G. Photographs



A



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**RECEIVED** NOV 14 2006

City of Edina

November 13, 2006

Mr. Nile Fellows  
Project Manager  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, MN 55155

RE: Access Agreement for monitoring well

Dear Nile:

Attached is the signed agreement for the monitoring well at Dundee Road and Vernon Avenue in Edina.

If you have any questions or need additional information please contact me at 952-826-0443 or at [whoule@ci.edina.mn.us](mailto:whoule@ci.edina.mn.us).

Sincerely,

Wayne D. Houle, PE  
Director of Public Works / City Engineer

C: Roger Glanzer – City of Edina

G:\Engineering\Improvements\WM405 Well 7 Rehabilitation\CORRESPONDENCE\111306 nile fellows mpca access agreement.doc

**City Hall**

4801 WEST 50TH STREET  
EDINA, MINNESOTA, 55424-1394

[www.cityofedina.com](http://www.cityofedina.com)

**952-927-8861**  
FAX 952-826-0390  
TTY 952-826-0379

ACCESS AGREEMENT BETWEEN  
MINNESOTA POLLUTION CONTROL AGENCY  
AND  
THE CITY OF EDINA

The Minnesota Pollution Control Agency (MPCA) is investigating the release of hazardous substances or pollutants or contaminants in the vicinity of property owned by the City of Edina at: intersection of Dundee Road and Vernon Avenue South. (Map Attached)

\_\_\_\_\_ Check if legal description is also attached.

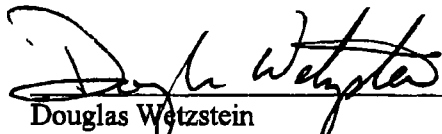
The Property Owner hereby consents and authorizes MPCA, its employees, agents, and contractors to enter this property for the purpose of investigating the release of hazardous substances or pollutants or contaminants including conducting soil borings and/or installing and sampling ground water monitoring wells. The MPCA is authorized to take these actions under Minn. Stat. § 115B.17, subd. 4 and Minn. Stat. § 115.04, subd. 3.

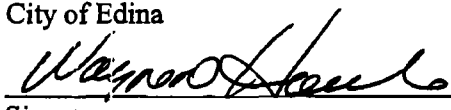
The MPCA will attempt to notify the Property Owner at least 48 hours before entering the property. Work will be conducted during regular business hours (8:00 a.m. - 5:00 p.m.) unless the MPCA receives permission to conduct work during different hours. The MPCA will conduct its activities so as to minimize interference with the use of the property. If any portion of the property must be disturbed as a result of the MPCA's activities, the MPCA will restore the property to as close to its original condition as is reasonably possible under the circumstances. The Property Owner will take reasonable precautions to insure that the equipment of the MPCA and its contractors on the property and monitoring wells are not damaged and that the work being conducted by the MPCA, its employees, agents, and contractors is not disrupted.

MPCA will obtain any necessary permits for installation and maintenance of the monitoring wells, if such wells are installed. Upon completion of all necessary sampling, the MPCA will seal the monitoring wells in accordance with state law. Results of all testing conducted on the property will be provided to the Property Owner after test validations.

The MPCA will be liable for injury to or loss of property or personal injury or death caused by any act or omission of any employee of the state in the performance of the work described above, under circumstances where the state, if a private person, would be liable to the claimant, in accordance with Minn. Stat. § 3.736.

MINNESOTA POLLUTION CONTROL AGENCY

  
\_\_\_\_\_  
Douglas Wetzstein  
Supervisor  
Remediation Division  
  
11/15/06  
\_\_\_\_\_  
Date

City of Edina  
  
\_\_\_\_\_  
Signature  
  
Director of Public Works /  
\_\_\_\_\_  
Title City Engineer  
  
11/12/06  
\_\_\_\_\_  
Date



## Hennepin County Property Map Print Page

### -Primary (1) Location of Monitoring Well



#### READ IMPORTANT DISCLAIMER INFORMATION

Property ID	Approximate Property Perimeter	Approximate Property Area
32-117-21-24-0001	626 ft.	11,394 sq.ft. = 0.26 acres
Property Address	Market Value	Total Tax (2006)
24 ADDRESS UNASSIGNED EDINA, MN 00000	\$0.00	\$0.00

The data contained on this page is derived from a compilation of records and maps and may contain discrepancies that can only be disclosed by an accurate performed by a licensed land surveyor. The perimeter and area (square footage and acres) are approximates and may contain discrepancies. The information should be used for reference purposes only. Hennepin County does not guarantee the accuracy of material herein contained and is not responsible for any misrepresentation of this information or its derivatives.



B

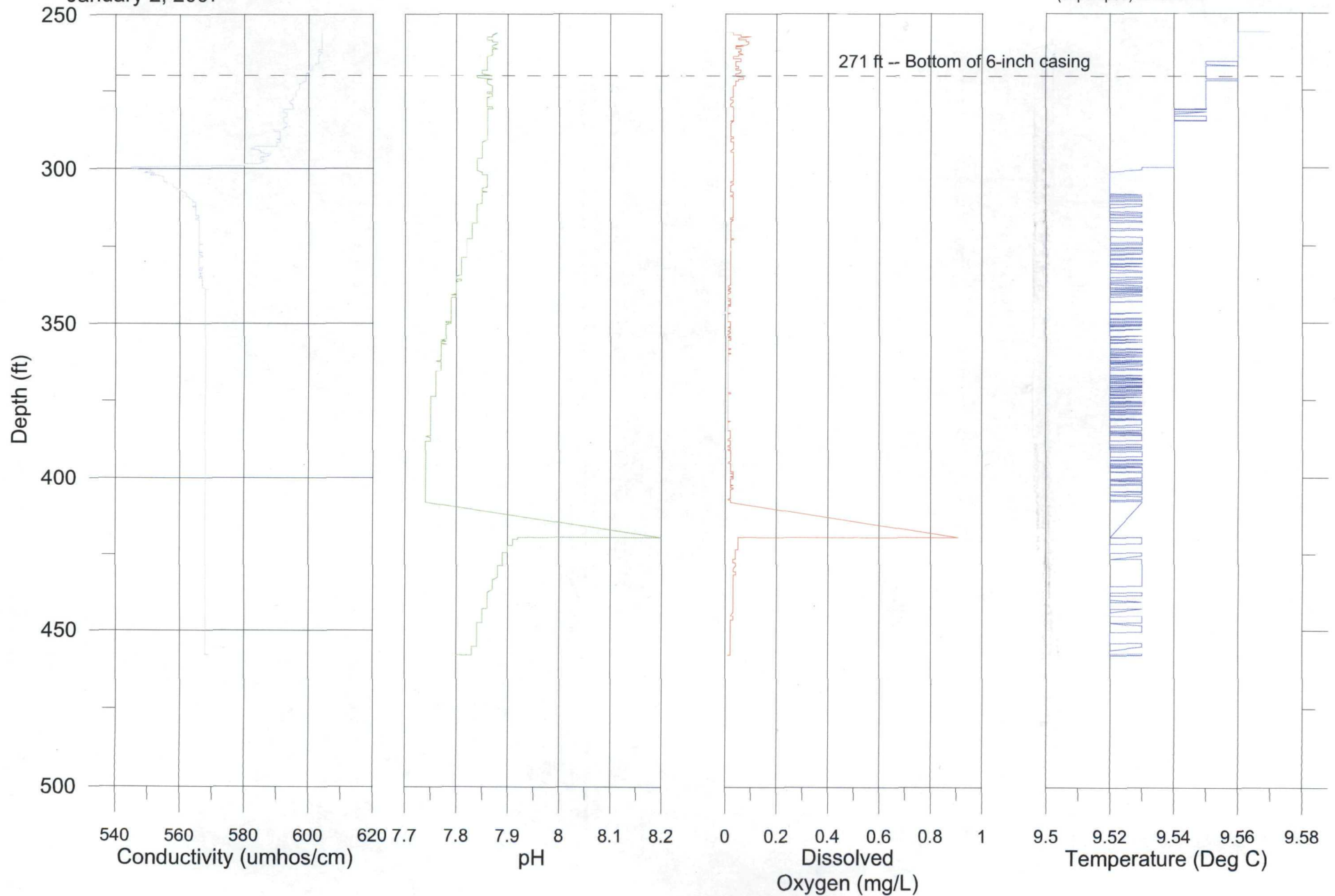


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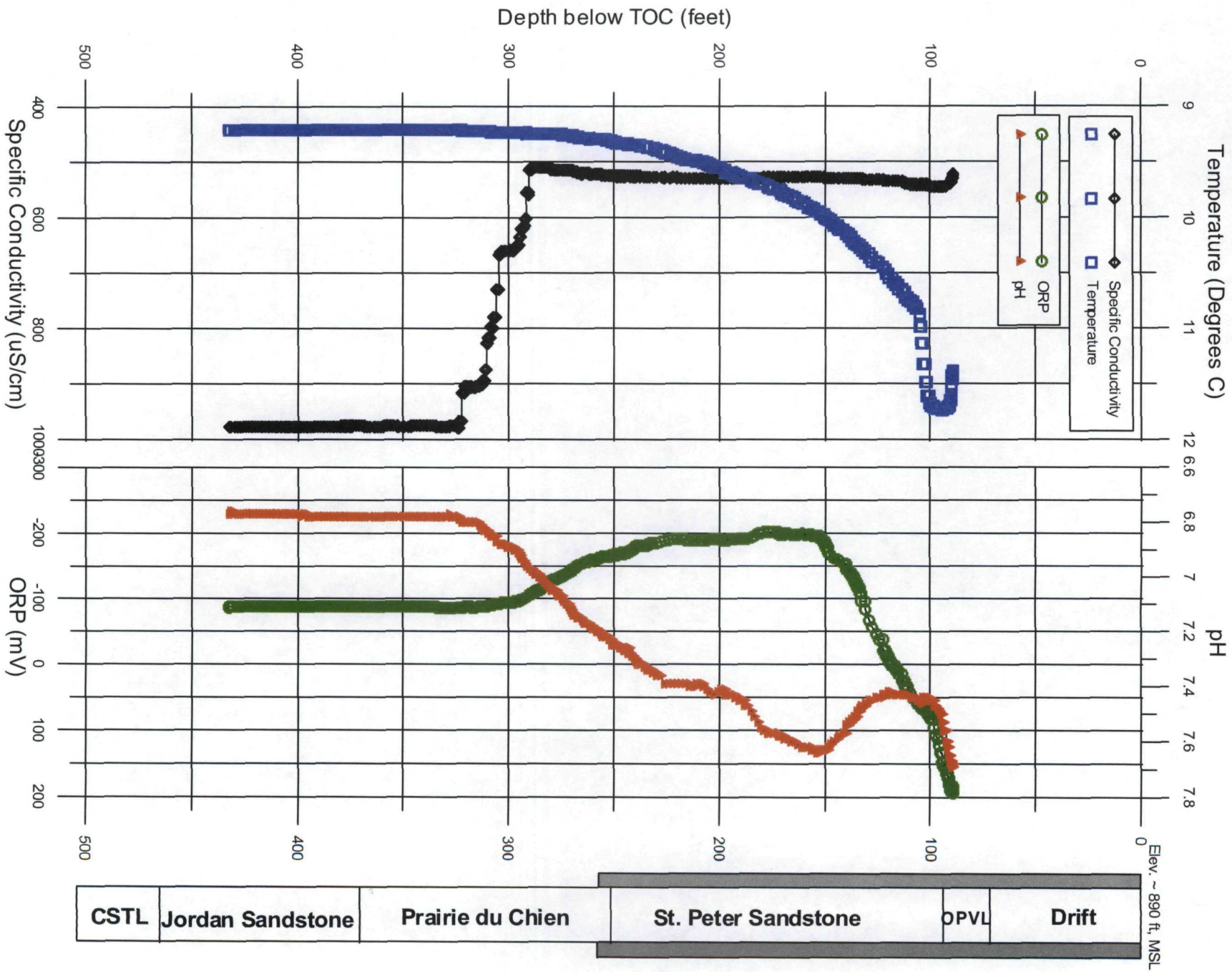


Water Quality Indicator Parameters  
Depth Profile -- Edina Test Well (748656)  
January 2, 2007

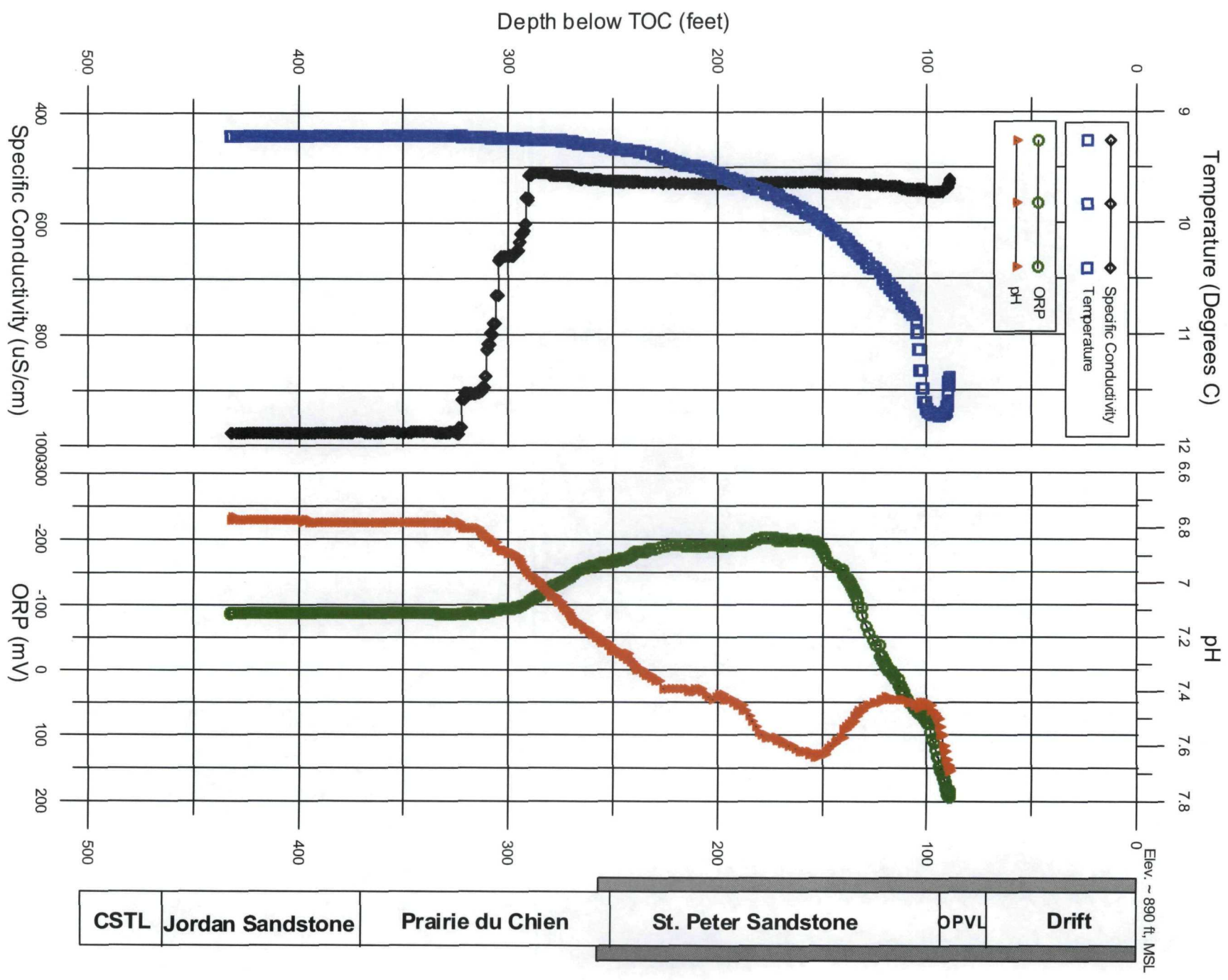
Note: Profile measured under static  
(unpumped) conditions.



Meadowbrook Golf Course Well No. 1 (216009)  
Hydrolab Measurements (March 8, 2005)



Meadowbrook Golf Course Well No. 1 (216009)  
 Hydrolab Measurements (March 8, 2005)



Minnesota Geological  
University of Minnesota  
2642 University Avenue  
St. Paul MN 55114  
Dept. Phone:(612)627-4780



NAME : EDINA TEST WELL 1 - CALIPER

UNIQUE NUMBER : 748656

QUADRANGLE : MINNEAPOLIS SOUTH 104-A

COUNTY : HENNEPIN

LOCATIONON : BDAABA

SECTION : 32

TOWNSHIP : 117

RANGE : 21

DATE : 01/08/07

MGS CUTTINGS # :

API NO. BOTTOM : 271

KB :

LOG BOTTOM : 463.20

LOG MEASURED FROM:

DF :

LOG TOP : 264.70

DRL MEASURED FROM:

GL : 892 5

CASING DIAMETER : 6

LOGGING UNIT :

CASING TYPE :

FIELD OFFICE : TRUCK

CASING THICKNESS:  
RUN NO. : 1

RECORDED BY : TIPPING

BIT SIZE : 6

BOREHOLE FLUID : 0

FILE : ORIGINAL

MAGNETIC DECL. : 0

RM : 0

TYPE : 8074A

MATRIX DENSITY : 2.71

RM TEMPERATURE : 0

NEUTRON MATRIX : Dolomite  
CASING OD : 6

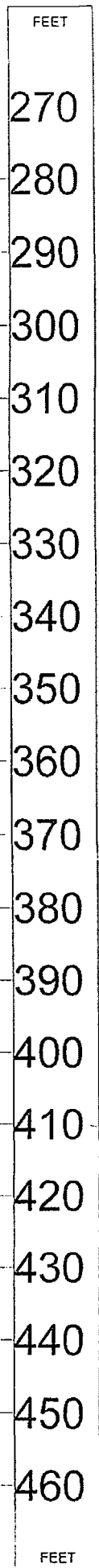
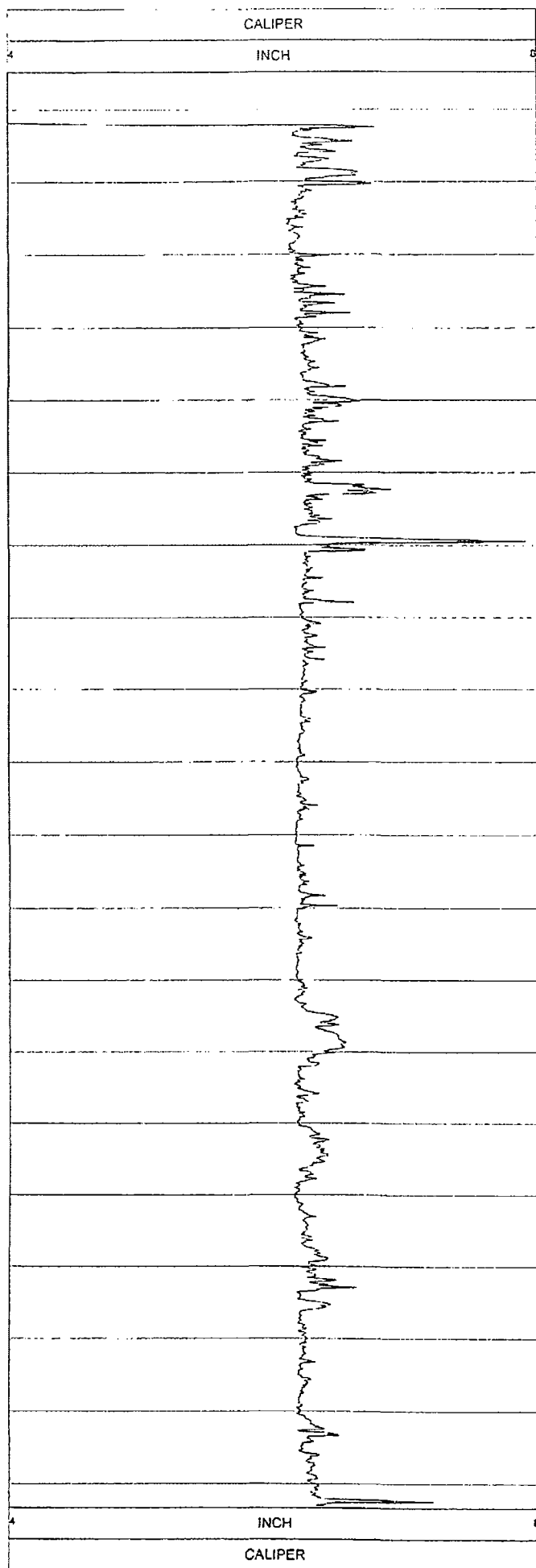
MATRIX DELTA T : 54

THRESH: 2500

SWL : 94

TOOL GOT STUCK ON BOTTOM OF CASING

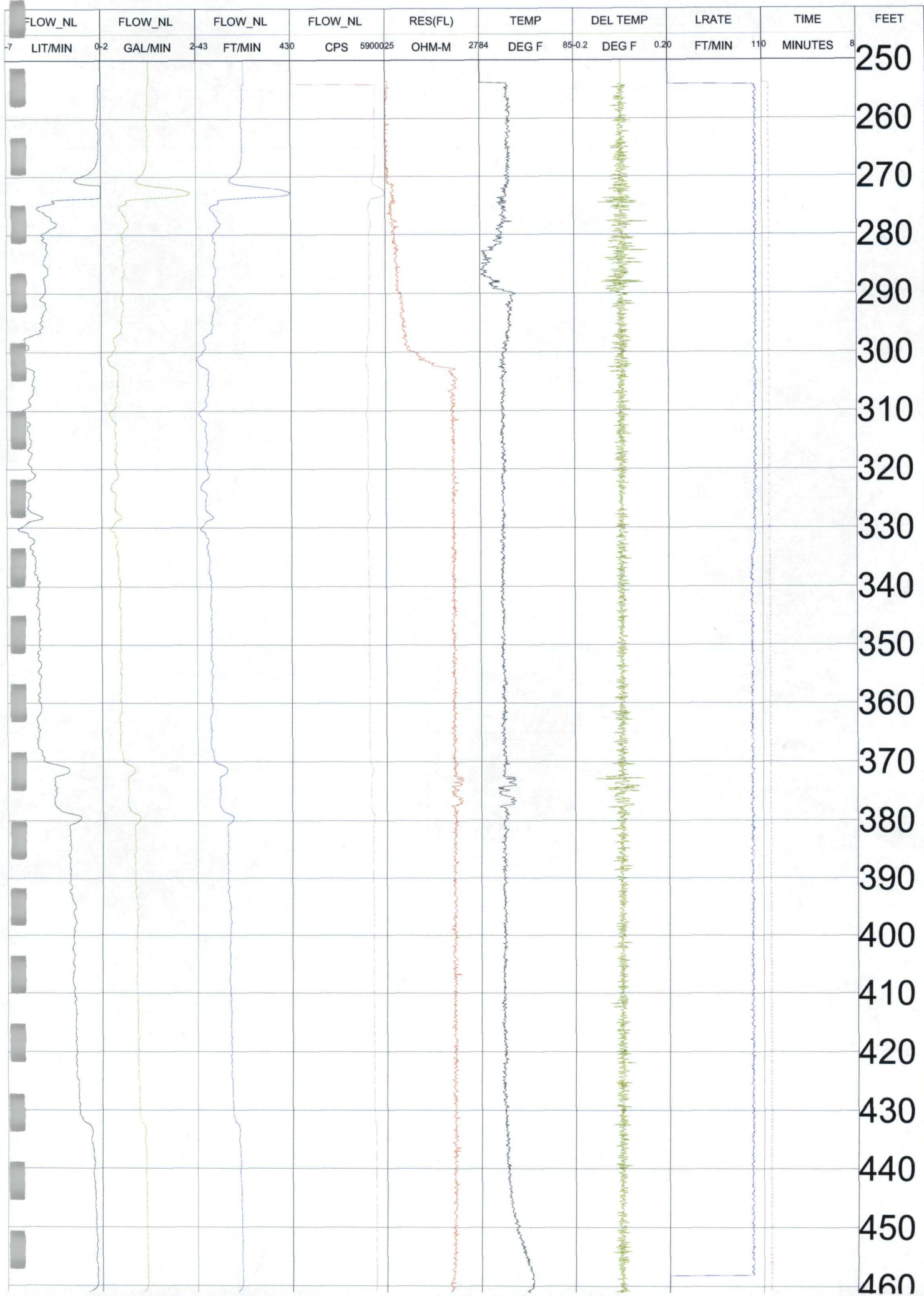
WITNESSED BY : ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



Minnesota Geological  
University of Minnesota  
2642 University Avenue  
St. Paul MN 55114  
Dept. Phone:(612)627-4780



NAME	: EDINA TEST WELL 1 - AMB TROLL	OTHER SERVICES:	
UNIQUE NUMBER	: 748656		
QUADRANGLE	: MINNEAPOLIS SOUTH 104-A		
COUNTY	: HENNEPIN		
LOCATION	: BDAABA		
SECTION	: 32	TOWNSHIP	: 117
		RANGE	: 21
DATE	: 01/08/07	MGS CUTTINGS #	:
API NO. BOTTOM	: 271		KB :
LOG BOTTOM	: 462.20	LOG MEASURED FROM:	DF :
LOG TOP	: 250.00	DRL MEASURED FROM:	GL : 892.5
CASING DIAMETER	: 6	LOGGING UNIT	:
CASING TYPE	:	FIELD OFFICE	: TRUCK
CASING THICKNESS	:	RECORDED BY	: TIPPING
RUN NO.	: 1		
BIT SIZE	: 6	BOREHOLE FLUID	: 0
MAGNETIC DECL.	: 0	RM	: 0
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0
NEUTRON MATRIX	: Dolomite	MATRIX DELTA T	: 54
CASING OD	: 6		
		THRESH:	2500
SWL	: 94		
	CONTROLLED WITH STABILIZER, NO SKIRT		
WITNESSED BY	: ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS		





# DOWNHOLE WELL SERVICES, LLC.

8145 Long Lake Road  
Mounds View, Minnesota 55112-6033

Phone: (763) 785-1876

Fax: (763) 784-2244

Cell: (651) 238-1198

E-mail: marsabitt@aol.com

Web Site: www.downholewellservices.com

Wireline Services Manager: James Traen

## PROJECT NAME: Edina - OPCJ Well - April 5, 2007

### LOCATION

**STREET ADDRESS:** Dundee Road & Vernon Avenue S.

**City:** Edina

**County:** Hennepin

**State:** Minnesota

**N44 deg. 54min. 140sec. W093deg. 22min. 310sec.**

**MGS Quad.:** 104A

**Township Name:** Edina City **Township:** 117N **Range:** 21W **Section:** 32 **Qtr. Section:** SESWNENW

**Unique Well No.:** 748656 **Project No.:** 1582-006 **Cutting Set No.:** MGS???? **File:** edinaOPCJ.LAS

### GENERAL DATA

**Well Owner:** Minnesota Pollution Control Agency **Representative:**

**Engineering Firm/Client:** STS Consultants, Ltd. **Principal Engineer:** Mr. Robert L. DeGroot, PG, PE

**Project Manager:** Mr. Peter Rzepecki, PG

**Drilling Co.:** Mark J. Traut Wells, Inc.

**Driller:** Mr. Robbie Terres & Mr. Dave Weller

**Logging Unit/Truck:** 201

**Other Services:** Downhole Discrete Sampling

### BOREHOLE DATA

**Depth Drilled:** 460 feet

**Reported Depth:** 461 feet

**Depth Logged:** 461 feet

**Depth Reference:** T.O. 6 inch

**Elevation:** 902.03 feet

**Stickup:** 3.08 feet

<u>Bit Size</u>	<u>From</u>	<u>To</u>	<u>Casing Size</u>	<u>From</u>	<u>To</u>	<u>Comments</u>
1. 10 inches	0.0 feet	271 feet	6 inch	0.00 feet	272 feet	Steel
2. 5 7/8 inches	271.0 feet	461 feet				Open Hole
3.						
4.						

**Drilling Method:** Mud/Air Rotary **Date Drilled:** December 7, 2006 **Fluid Level:** 94 feet

**Drilling Fluid:** Bentonite/Air **Hole Medium:** Water

**Date Logged:** April 5, 2007

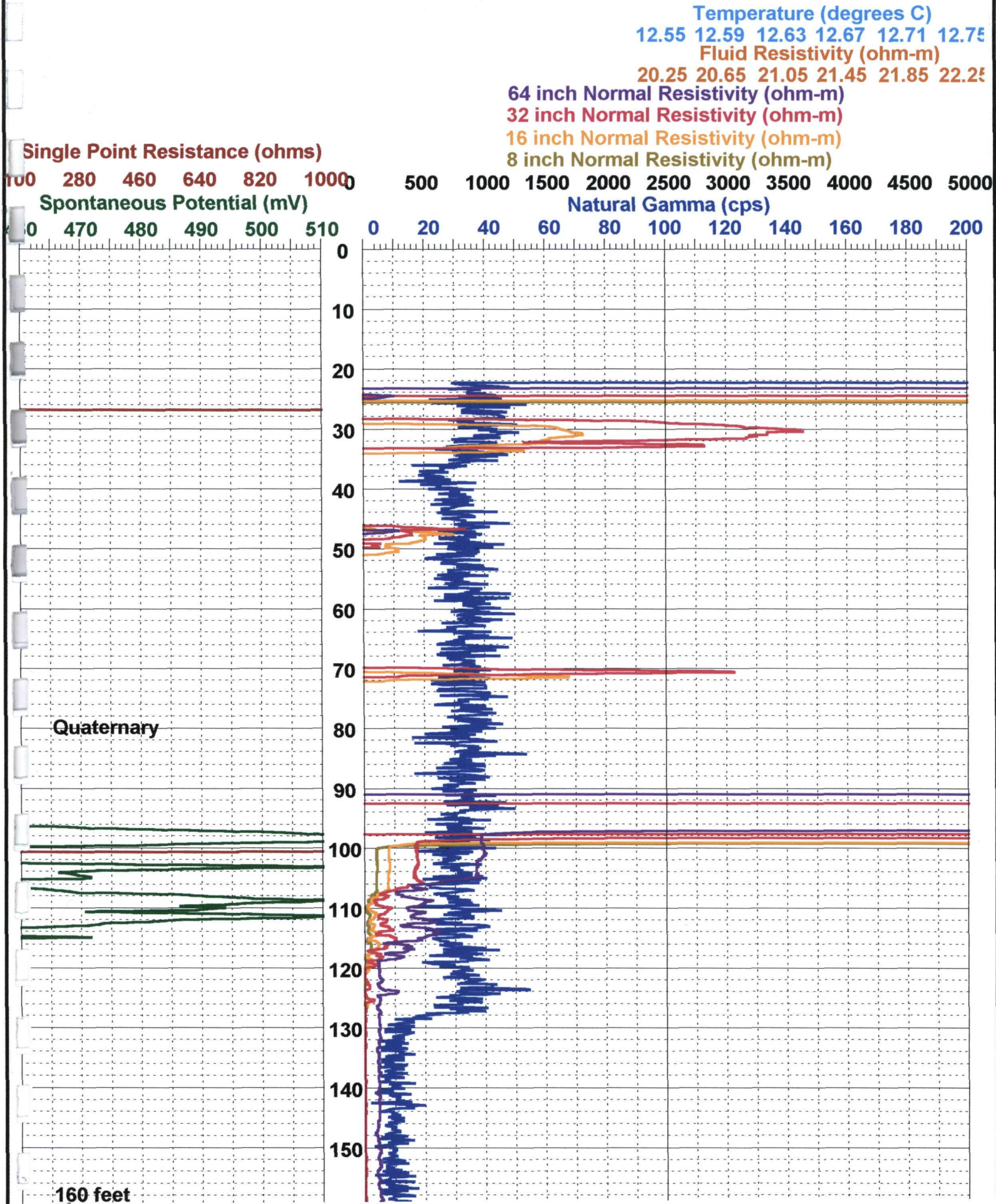
**Time Since Circulation:** unknown

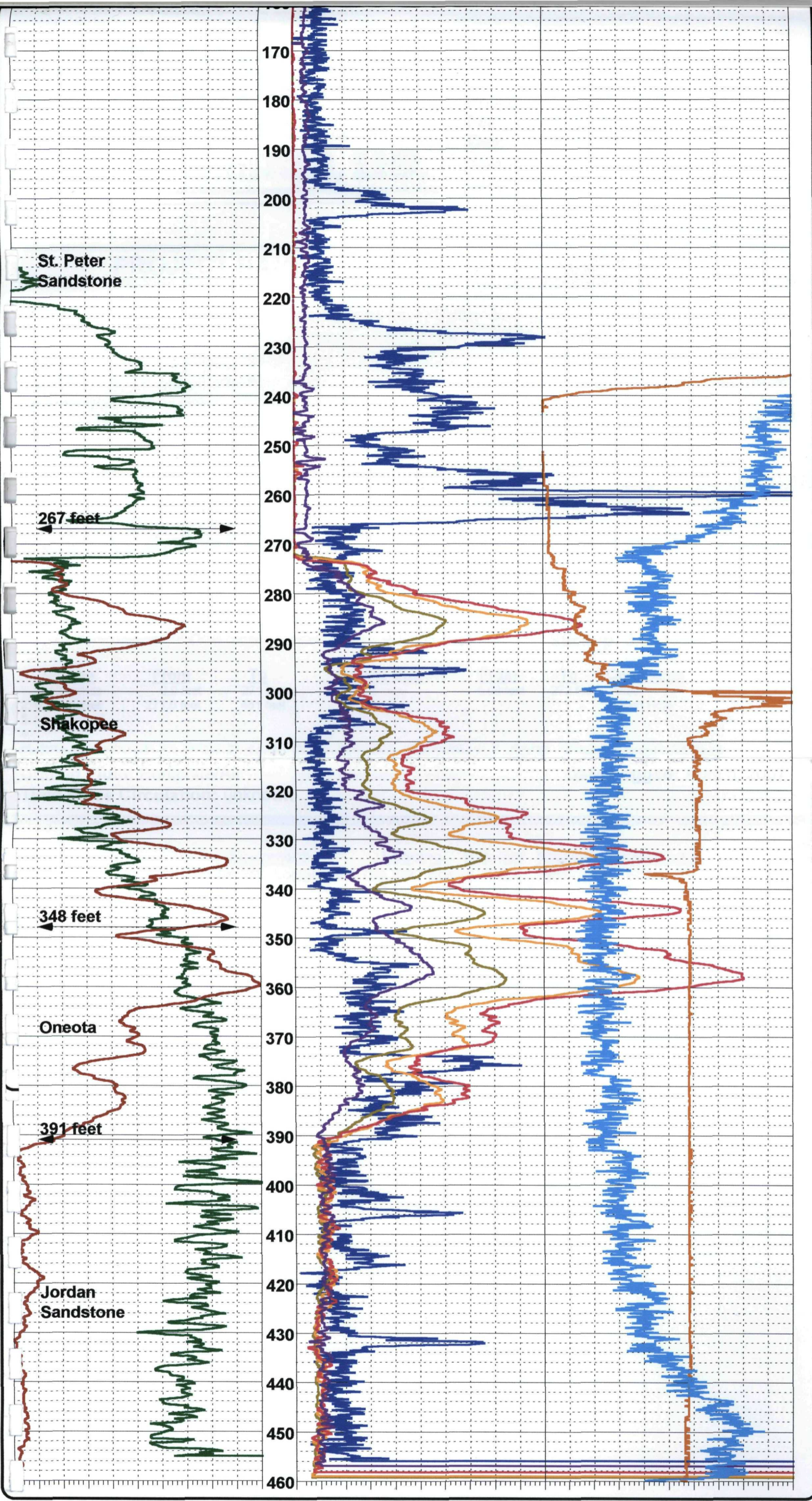
### LOGGING DATA

<u>Log Name</u>	<u>Run No.</u>	<u>Equipment</u>	<u>Probe S/N</u>	<u>Logger S/N</u>	<u>Logging</u>	<u>Detector</u>	<u>Source</u>	<u>Logged Inter.</u>
1. Polyelectric	2	2919	1038		Dig. Int. Speed	Type	Type Size	From To
2.					0.16ft. 12ft./min.	Scintill.		461 feet 20 feet
3.								
4.								

**Remarks:** Conclusions and recommendations associated with formation contacts are based, in part, on information Downhole Well Services, LLC obtained with current sources. Downhole Well Services' depictions of these contacts are based partially on Downhole Well Services' observations along with review and comments provided by the appropriate state or federal agencies. Verification of the authenticity or accuracy of this information is not warranted or guaranteed by Downhole Well Services, LLC.

# Edina - OPCJ Well - April 5, 2007







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C



# CHAIN OF CUSTODY RECORD

No. **34984**



Contact Person PETER RZEPECKI  
 Phone No. 763-315-6345 Office  
 Project No. 00605032, T104 No.  
 Project Name EDINA OPEC TEST WELL

## Special Handling Request

- ☐ Rush  
☐ Verbal  
☐ Other

RECORD NUMBER \_\_\_\_\_ THROUGH \_\_\_\_\_

Laboratory \_\_\_\_\_  
 Contact Person \_\_\_\_\_  
 Phone No. \_\_\_\_\_  
 Results Due \_\_\_\_\_

Sample I.D.	Date	Time	Grab	Composite	No. of Containers	Sample Type (Water, soil, air, sludge, etc.)	Preservation		Field Data				Analysis Request	Comments on Sample (Include Major Contaminants)
							Y	N	PID/FID		PH	Special Cond.		
									Ambient	Sample				
#1 (280')	4/5		X		2	VOC	X						LOW LEVEL VOC	
#1 (280')	4/5		X		2	TRITIUM		X					ENRICHED TRITIUM	
#2 (330')	4/5	4:20	X		2	VOC	X						LOW LEVEL VOC	
#2 (330')	4/5	4:20	X		2	TRITIUM		X					ENRICHED TRITIUM	
#3 (400')	4/5	6:00	X		2	VOC	X						LOW LEVEL VOC	
#3 (400')	4/5	6:00	X		1	TRITIUM		X					ENRICHED TRITIUM	
#4 (440')	4/5	7:10	X		2	VOC	X						LOW LEVEL VOC	
#4 (440')	4/5	7:10	X		1	TRITIUM		X					ENRICHED TRITIUM	

Collected by: <u>PETER RZEPECKI</u>	Date <u>4/5/07</u>	Time <u>7:10</u>	Delivery by: _____	Date _____	Time _____
Received by: <u>AL BLOOM</u>	Date <u>4/5/07</u>	Time _____	Relinquished by: _____	Date _____	Time _____
Received by: _____	Date _____	Time _____	Relinquished by: _____	Date _____	Time _____
Received by: _____	Date _____	Time _____	Relinquished by: _____	Date _____	Time _____
Received for lab by: _____	Date _____	Time _____	Relinquished by: _____	Date _____	Time _____

Laboratory Comments Only: Seals Intact Upon Receipt? ☐ Yes ☐ No ☐ N/A

Final Disposition: _____	Comments (Weather Conditions, Precautions, Hazards): _____
_____	_____
_____	_____

Distribution: Original and Green - Laboratory Yellow - As needed Pink - Transporter Goldenrod - STS Project File  
 Instructions to Laboratory: Forward completed original to STS with analytical results. Retain green copy.

6/99cp10k

**STS Consultants Ltd.**  
 Consulting Engineers



# SAMPLING INFORMATION FORM

STS Consultants, Ltd.  
10900 - 73<sup>rd</sup> Avenue North, Suite 150  
Maple Grove, MN 55369

Sampler's Name: ~~Tim Grape~~ PETER RZEPECKI  
Unusual Conditions \_\_\_\_\_  
Location EDINA TEST WELL  
Sample ID number #1 (280') Date sampled 4/5/07  
Describe sampling point DISCRETE SAMPLE - SHAKOPEE FORMATION  
Unique Well Number 748656  
Weather: SUNNY, 30F  
Project EDINA OPCA TEST WELL  
STS project number 200605032, T1004  
Time \_\_\_\_\_ am \_\_\_\_\_ pm

## MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = 902.03 Datum = \_\_\_\_\_ Water elevation = \_\_\_\_\_  
Well depth (prior to sampling) = 461' feet below monitoring point (mp)  
Depth to water (below mp) = 94.57' feet Date \_\_\_\_\_ Time \_\_\_\_\_ am \_\_\_\_\_ pm  
Well diameter = 6" inches Water level above screen? \_\_\_\_\_ No \_\_\_\_\_ Yes \_\_\_\_\_ feet  
Volume of water in well = \_\_\_\_\_ gallons

## PURGING INFORMATION:

Purging method: Bailer \_\_\_\_\_ Submersible pump \_\_\_\_\_ Tap \_\_\_\_\_ Other NO PURGING - DISCRETE SAMPLE  
Tubing type: Teflon \_\_\_\_\_ Black poly \_\_\_\_\_ Other \_\_\_\_\_  
Pump intake or bailer set at waterline feet below monitoring point (mp).  
Discharge rate (if applicable) \_\_\_\_\_ gpm x 0.1336806 = \_\_\_\_\_ cfm  
At least 5 well volumes evacuated before sampling, totaling \_\_\_\_\_ gallons.

## SAMPLING INFORMATION

Sampling method: Bailer ~~✗~~ Tap \_\_\_\_\_ Other DISCRETE SAMPLE  
Tubing type (if applicable): Teflon \_\_\_\_\_ Other \_\_\_\_\_  
Bailer was: Disposable ~~✗~~ Laboratory cleaned \_\_\_\_\_ Field cleaned \_\_\_\_\_ Other \_\_\_\_\_  
Sample collected from Waterline feet below monitoring point (mp)  
Sample collection discharge rate (if applicable): = ~~5~~ gpm  
Sample appearance \_\_\_\_\_ Odor \_\_\_\_\_  
Note any sampling observations if necessary D.O. = \_\_\_\_\_ IRON = \_\_\_\_\_ NITRATE = \_\_\_\_\_

Chemical Analysis VOC, ORO, BRO, BTEX, METALS, PCB, PAH, Pesticides, Herbicides METALS, VOC, TRITIUM, GENERAL CHEMISTRY  
Equipment Calibration pH = 7.4, 10.7 Conductivity = 700  $\mu$ S @ \_\_\_\_\_

## FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [umhos/cm]	Temperature [°C]	Water Level (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
15:15	7.2	43 mV	204 $\mu$ S			0



## SAMPLING INFORMATION FORM

STS Consultants, Ltd.  
10900 - 73<sup>rd</sup> Avenue North, Suite 150  
Maple Grove, MN 55369

Sampler's Name: ~~THOMAS~~ PETER ZLEPECKI  
Unusual Conditions \_\_\_\_\_  
Location EDINA TEST WELL  
Sample ID number #2 (330') Date sampled 4/5/07  
Describe sampling point DISCRETE SAMPLE  
Unique Well Number T48656

Weather: SUNNY W F  
Project EDINA OPCJ TEST WELL  
STS project number 200605032, T1004  
Time \_\_\_\_\_ am \_\_\_\_\_ pm

### MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = \_\_\_\_\_ Datum = \_\_\_\_\_ Water elevation = \_\_\_\_\_  
Well depth (prior to sampling) = \_\_\_\_\_ feet below monitoring point (mp)  
Depth to water (below mp) = \_\_\_\_\_ feet Date \_\_\_\_\_ Time \_\_\_\_\_ am \_\_\_\_\_ pm  
Well diameter = 6" inches Water level above screen? \_\_\_\_\_ No \_\_\_\_\_ Yes \_\_\_\_\_ feet  
Volume of water in well = \_\_\_\_\_ gallons

### PURGING INFORMATION:

Purging method: Bailer \_\_\_\_\_ Submersible pump \_\_\_\_\_ Tap \_\_\_\_\_ Other NO PURGING - DISCRETE SAMPLE  
Tubing type: Teflon \_\_\_\_\_ Black poly \_\_\_\_\_ Other \_\_\_\_\_  
Pump intake or bailer set at waterline feet below monitoring point (mp).  
Discharge rate (if applicable) \_\_\_\_\_ gpm x 0.1336806 = \_\_\_\_\_ cfm  
At least 5 well volumes evacuated before sampling, totaling \_\_\_\_\_ gallons.

### SAMPLING INFORMATION

Sampling method: Bailer ~~XS~~ Tap \_\_\_\_\_ Other DISCRETE SAMPLE  
Tubing type (if applicable): Teflon \_\_\_\_\_ Other \_\_\_\_\_  
Bailer was: Disposable ~~XS~~ Laboratory cleaned \_\_\_\_\_ Field cleaned \_\_\_\_\_ Other \_\_\_\_\_  
Sample collected from Waterline feet below monitoring point. (mp)  
Sample collection discharge rate (if applicable): = ~~Batted~~ gpm  
Sample appearance \_\_\_\_\_ Odor \_\_\_\_\_  
Note any sampling observations if necessary D.O. = \_\_\_\_\_ IRON = \_\_\_\_\_ NITRATE = \_\_\_\_\_

Chemical Analysis ~~VOC, GRO, DRO, BTEX, METALS, PCB, PAH, Pesticides, Herbicides~~ METALS, VOC, TRITIUM, GENERAL CHEMISTRY  
Equipment Calibration pH = 7.4, 10.7 Conductivity = 700µs @ \_\_\_\_\_

### FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance [umhos/cm]	Temperature [°C]	Water Level (nearest 0.01 ft.)	Cumulative volume of water removed [gal.]
16:50	7.5	101 mV	290 µS			



# SAMPLING INFORMATION FORM

STS Consultants, Ltd.  
10900 - 73<sup>rd</sup> Avenue North, Suite 150  
Maple Grove, MN 55369

Sampler's Name: Tim Grapo P. RZEPECKI  
Unusual Conditions \_\_\_\_\_  
Location EDINA  
Sample ID number #4 (4401) Date sampled 4/5/07  
Describe sampling point DISCRETE SAMPLE  
Unique Well Number 748 656

Weather: SUNNY 30 F  
Project EDINA TEST WELL  
STS project number 200605032  
Time \_\_\_\_\_ am \_\_\_\_\_ pm

## MONITORING WELL INFORMATION: (If Applicable)

Monitoring point elevation = 902.05' Datum = \_\_\_\_\_ Water elevation = \_\_\_\_\_  
Well depth (prior to sampling) = 461' feet below monitoring point (mp)  
Depth to water (below mp) = \_\_\_\_\_ feet Date \_\_\_\_\_ Time \_\_\_\_\_ am \_\_\_\_\_ pm  
Well diameter = 4 6" inches Water level above screen? \_\_\_\_\_ No \_\_\_\_\_ Yes \_\_\_\_\_ feet  
Volume of water in well = \_\_\_\_\_ gallons

## PURGING INFORMATION:

Purging method: Bailer \_\_\_\_\_ Submersible pump \_\_\_\_\_ Tap \_\_\_\_\_ Other NO PURGING  
Tubing type: Teflon \_\_\_\_\_ Black poly \_\_\_\_\_ Other \_\_\_\_\_  
Pump intake or bailer set at waterline feet below monitoring point (mp).  
Discharge rate (if applicable) \_\_\_\_\_ gpm x 0.1336806 = \_\_\_\_\_ cfm  
At least 2 well volumes evacuated before sampling, totaling \_\_\_\_\_ gallons.

## SAMPLING INFORMATION

Sampling method: Bailer 4 Tap \_\_\_\_\_ Other DISCRETE SAMPLE  
Tubing type (if applicable): Teflon \_\_\_\_\_ Other \_\_\_\_\_  
Bailer was: Disposable 4 Laboratory cleaned \_\_\_\_\_ Field cleaned \_\_\_\_\_ Other \_\_\_\_\_  
Sample collected from Waterline feet below monitoring point. (mp)  
Sample collection discharge rate (if applicable): = DISCRETE gpm  
Sample appearance \_\_\_\_\_ Odor \_\_\_\_\_  
Note any sampling observations if necessary D.O. = IRON = NITRATE =

Chemical Analysis VOC, ORG, DRG, BTEX, METALS, PCB, PAH, Pesticide, Herbicide METALS, VOC, TRITIUM  
Equipment Calibration pH = 7.4, 10.7 Conductivity = 700  $\mu$ S @ GENERAL CHEMISTRY

## FIELD STABILIZATION

Military time	pH	Redox Pot.	Temperature corrected conductance ( $\mu$ mhos/cm)	Temperature ( $^{\circ}$ C)	Water Level (nearest 0.01 ft.)	Cumulative volume of water removed (gal.)
<u>19:50</u>	<u>7.6</u>	<u>-52 mV</u>	<u>428 <math>\mu</math>S</u>			

\*\*\*\*\*  
 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
 \*\*\*\*\*

# Minnesota Department Of Health - Environmental Laboratory

## Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 1 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706710 Receiving Comments: LOW LEVEL VOC 468

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1435	1(280')	VOC
Trip Blank	Field Blank		

### \*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
4-Bromofluorobenzene (surrogate)		77.5	70-130	%	16-APR-07 13:09
1,2-Dichlorobenzene-D4 (surrogate)		83.4	70-130	%	16-APR-07 13:09
Dibromofluoromethane (surrogate)		85.4	70-130	%	16-APR-07 13:09
Toluene-D8 (surrogate)		82.3	70-130	%	16-APR-07 13:09
1,2-Dichloroethane-D4 (surrogate)		83.5	70-130	%	16-APR-07 13:09
Acetone	<	20	20	ug/L	16-APR-07 13:09
Allyl chloride	<	0.5	0.5	ug/L	16-APR-07 13:09
Benzene	<	0.2	0.2	ug/L	16-APR-07 13:09
Bromobenzene	<	0.2	0.2	ug/L	16-APR-07 13:09
Bromochloromethane	<	0.5	0.5	ug/L	16-APR-07 13:09
Bromodichloromethane	<	0.2	0.2	ug/L	16-APR-07 13:09
Bromoform	<	0.5	0.5	ug/L	16-APR-07 13:09
Bromomethane	<	1.0	1.0	ug/L	16-APR-07 13:09
n-Butylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
sec-Butylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
tert-Butylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
Carbon tetrachloride	<	0.2	0.2	ug/L	16-APR-07 13:09
Chlorobenzene	<	0.2	0.2	ug/L	16-APR-07 13:09
Chlorodibromomethane	<	0.5	0.5	ug/L	16-APR-07 13:09
Chloroethane	<	0.5	0.5	ug/L	16-APR-07 13:09
Chloroform	<	0.1	0.1	ug/L	16-APR-07 13:09

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 2 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706710 Receiving Comments: LOW LEVEL VOC 468

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1435	1(280')	VOC
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
Chloromethane	<	1.0	1.0	ug/L	16-APR-07 13:09
2-Chlorotoluene	<	0.5	0.5	ug/L	16-APR-07 13:09
4-Chlorotoluene	<	0.5	0.5	ug/L	16-APR-07 13:09
1,2-Dibromo-3-chloropropane (DBCP)	<	2.0	2.0	ug/L	16-APR-07 13:09
1,2-Dibromoethane (EDB)	<	0.5	0.5	ug/L	16-APR-07 13:09
Dibromomethane	<	0.5	0.5	ug/L	16-APR-07 13:09
1,2-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 13:09
1,3-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 13:09
1,4-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 13:09
Dichlorodifluoromethane	<	1.0	1.0	ug/L	16-APR-07 13:09
1,1-Dichloroethane	<	0.2	0.2	ug/L	16-APR-07 13:09
1,2-Dichloroethane	<	0.2	0.2	ug/L	16-APR-07 13:09
1,1-Dichloroethene	<	0.5	0.5	ug/L	16-APR-07 13:09
cis-1,2-Dichloroethene	<	0.2	0.2	ug/L	16-APR-07 13:09
trans-1,2-Dichloroethene	<	0.1	0.1	ug/L	16-APR-07 13:09
Dichlorofluoromethane	<	0.5	0.5	ug/L	16-APR-07 13:09
1,2-Dichloropropane	<	0.2	0.2	ug/L	16-APR-07 13:09
1,3-Dichloropropane	<	0.2	0.2	ug/L	16-APR-07 13:09
2,2-Dichloropropane	<	0.5	0.5	ug/L	16-APR-07 13:09
1,1-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 13:09
cis-1,3-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 13:09

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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# Minnesota Department Of Health - Environmental Laboratory

## Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 3 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706710 Receiving Comments: LOW LEVEL VOC 468

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1435	1(280')	VOC
Trip Blank	Field Blank		
-	-		

### \*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
trans-1,3-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 13:09
Ethylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
Ethyl ether	<	2.0	2.0	ug/L	16-APR-07 13:09
Hexachlorobutadiene	<	1.0	1.0	ug/L	16-APR-07 13:09
Isopropylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
p-Isopropyltoluene	<	0.5	0.5	ug/L	16-APR-07 13:09
Methylene chloride	<	0.5	0.5	ug/L	16-APR-07 13:09
Methyl ethyl ketone (MEK)	<	10	10	ug/L	16-APR-07 13:09
Methyl isobutyl ketone (MIBK)	<	5.0	5.0	ug/L	16-APR-07 13:09
Methyl tertiary butyl ether (MTBE)	<	2.0	2.0	ug/L	16-APR-07 13:09
Naphthalene	<	1.0	1.0	ug/L	16-APR-07 13:09
n-Propylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
Styrene	<	0.5	0.5	ug/L	16-APR-07 13:09
1,1,1,2-Tetrachloroethane	<	0.2	0.2	ug/L	16-APR-07 13:09
1,1,2,2-Tetrachloroethane	<	0.2	0.2	ug/L	16-APR-07 13:09
Tetrachloroethene	<	0.2	0.2	ug/L	16-APR-07 13:09
Tetrahydrofuran (THF)	<	10	10	ug/L	16-APR-07 13:09
<b>Toluene</b>	J	0.3	0.5	ug/L	16-APR-07 13:09
1,2,3-Trichlorobenzene	<	1.0	1.0	ug/L	16-APR-07 13:09
1,2,4-Trichlorobenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
1,1,1-Trichloroethane	<	0.2	0.2	ug/L	16-APR-07 13:09

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 4 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706710 Receiving Comments: LOW LEVEL VOC 468

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1435	1(280')	VOC
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
1,1,2-Trichloroethane	<	0.2	0.2	ug/L	16-APR-07 13:09
Trichloroethene (TCE)	<	0.1	0.1	ug/L	16-APR-07 13:09
Trichlorofluoromethane	<	0.5	0.5	ug/L	16-APR-07 13:09
1,2,3-Trichloropropane	<	0.5	0.5	ug/L	16-APR-07 13:09
1,1,2-Trichlorotrifluoroethane	<	0.2	0.2	ug/L	16-APR-07 13:09
1,2,4-Trimethylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
1,3,5-Trimethylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:09
Vinyl chloride	<	0.2	0.2	ug/L	16-APR-07 13:09
o-Xylene	<	0.2	0.2	ug/L	16-APR-07 13:09
p&m-Xylene	<	0.3	0.3	ug/L	16-APR-07 13:09

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\*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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# Minnesota Department Of Health - Environmental Laboratory

## Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007

Date Generated: 26-APR-2007

Request Page: 5 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID

Project Name

Sampled By

-

EDINA OPC7 TEST WELL

PETER RZEPECKI

Sample No: 200706711 Receiving Comments: ENRICHED TRITIUM 981/995

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1435	1(280')	TRITIUM

Trip Blank	Field Blank
-	-

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

(Results Not Yet Reported)

Unit: ADMINISTRATIVE

981 Analyses sent to private lab

995 Admin. Consultation

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 6 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706712 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1620	2(330')	VOC
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

Result  
Codes

468 VOCs in Water by GC/MS

	Result	Rept Level	Units	Analysis Date
4-Bromofluorobenzene (surrogate)	76.2	70-130	%	16-APR-07 13:39
1,2-Dichlorobenzene-D4 (surrogate)	82.3	70-130	%	16-APR-07 13:39
Toluene-D8 (surrogate)	80.9	70-130	%	16-APR-07 13:39
1,2-Dichloroethane-D4 (surrogate)	84.5	70-130	%	16-APR-07 13:39
Dibromofluoromethane (surrogate)	85.9	70-130	%	16-APR-07 13:39
Acetone	< 20	20	ug/L	16-APR-07 13:39
Allyl chloride	< 0.5	0.5	ug/L	16-APR-07 13:39
Benzene	< 0.2	0.2	ug/L	16-APR-07 13:39
Bromobenzene	< 0.2	0.2	ug/L	16-APR-07 13:39
Bromochloromethane	< 0.5	0.5	ug/L	16-APR-07 13:39
Bromodichloromethane	< 0.2	0.2	ug/L	16-APR-07 13:39
Bromoform	< 0.5	0.5	ug/L	16-APR-07 13:39
Bromomethane	< 1.0	1.0	ug/L	16-APR-07 13:39
n-Butylbenzene	< 0.5	0.5	ug/L	16-APR-07 13:39
sec-Butylbenzene	< 0.5	0.5	ug/L	16-APR-07 13:39
tert-Butylbenzene	< 0.5	0.5	ug/L	16-APR-07 13:39
Carbon tetrachloride	< 0.2	0.2	ug/L	16-APR-07 13:39
Chlorobenzene	< 0.2	0.2	ug/L	16-APR-07 13:39
Chlorodibromomethane	< 0.5	0.5	ug/L	16-APR-07 13:39
Chloroethane	< 0.5	0.5	ug/L	16-APR-07 13:39
Chloroform	< 0.1	0.1	ug/L	16-APR-07 13:39

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 7 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706712 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1620	2 (330')	VOC

Trip Blank	Field Blank
-	-

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
Chloromethane	<	1.0	1.0	ug/L	16-APR-07 13:39
2-Chlorotoluene	<	0.5	0.5	ug/L	16-APR-07 13:39
4-Chlorotoluene	<	0.5	0.5	ug/L	16-APR-07 13:39
1,2-Dibromo-3-chloropropane (DBCP)	<	2.0	2.0	ug/L	16-APR-07 13:39
1,2-Dibromoethane (EDB)	<	0.5	0.5	ug/L	16-APR-07 13:39
Dibromomethane	<	0.5	0.5	ug/L	16-APR-07 13:39
1,2-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 13:39
1,3-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 13:39
1,4-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 13:39
Dichlorodifluoromethane	<	1.0	1.0	ug/L	16-APR-07 13:39
1,1-Dichloroethane	<	0.2	0.2	ug/L	16-APR-07 13:39
1,2-Dichloroethane	<	0.2	0.2	ug/L	16-APR-07 13:39
1,1-Dichloroethene	<	0.5	0.5	ug/L	16-APR-07 13:39
cis-1,2-Dichloroethene	<	0.2	0.2	ug/L	16-APR-07 13:39
trans-1,2-Dichloroethene	<	0.1	0.1	ug/L	16-APR-07 13:39
Dichlorofluoromethane	<	0.5	0.5	ug/L	16-APR-07 13:39
1,2-Dichloropropane	<	0.2	0.2	ug/L	16-APR-07 13:39
1,3-Dichloropropane	<	0.2	0.2	ug/L	16-APR-07 13:39
2,2-Dichloropropane	<	0.5	0.5	ug/L	16-APR-07 13:39
1,1-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 13:39
cis-1,3-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 13:39

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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Minnesota Department Of Health - Environmental Laboratory

Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 8 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706712 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1620	2(330')	VOC
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

Result  
Codes

	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS				
trans-1,3-Dichloropropene	< 0.2	0.2	ug/L	16-APR-07 13:39
Ethylbenzene	< 0.5	0.5	ug/L	16-APR-07 13:39
Ethyl ether	< 2.0	2.0	ug/L	16-APR-07 13:39
Hexachlorobutadiene	< 1.0	1.0	ug/L	16-APR-07 13:39
Isopropylbenzene	< 0.5	0.5	ug/L	16-APR-07 13:39
p-Isopropyltoluene	< 0.5	0.5	ug/L	16-APR-07 13:39
Methylene chloride	< 0.5	0.5	ug/L	16-APR-07 13:39
Methyl ethyl ketone (MEK)	< 10	10	ug/L	16-APR-07 13:39
Methyl isobutyl ketone (MIBK)	< 5.0	5.0	ug/L	16-APR-07 13:39
Methyl tertiary butyl ether (MTBE)	< 2.0	2.0	ug/L	16-APR-07 13:39
Naphthalene	< 1.0	1.0	ug/L	16-APR-07 13:39
n-Propylbenzene	< 0.5	0.5	ug/L	16-APR-07 13:39
Styrene	< 0.5	0.5	ug/L	16-APR-07 13:39
1,1,1,2-Tetrachloroethane	< 0.2	0.2	ug/L	16-APR-07 13:39
1,1,2,2-Tetrachloroethane	< 0.2	0.2	ug/L	16-APR-07 13:39
Tetrachloroethene	< 0.2	0.2	ug/L	16-APR-07 13:39
Tetrahydrofuran (THF)	< 10	10	ug/L	16-APR-07 13:39
<b>Toluene</b>	<b>J 0.2</b>	<b>0.5</b>	<b>ug/L</b>	<b>16-APR-07 13:39</b>
1,2,3-Trichlorobenzene	< 1.0	1.0	ug/L	16-APR-07 13:39
1,2,4-Trichlorobenzene	< 0.5	0.5	ug/L	16-APR-07 13:39
1,1,1-Trichloroethane	< 0.2	0.2	ug/L	16-APR-07 13:39

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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# Minnesota Department Of Health - Environmental Laboratory

## Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 9 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706712 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1620	2 (330')	VOC
Trip Blank	Field Blank		
-	-		

### \*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
1,1,2-Trichloroethane	<	0.2	0.2	ug/L	16-APR-07 13:39
Trichloroethene (TCE)	<	0.1	0.1	ug/L	16-APR-07 13:39
Trichlorofluoromethane	<	0.5	0.5	ug/L	16-APR-07 13:39
1,2,3-Trichloropropane	<	0.5	0.5	ug/L	16-APR-07 13:39
1,1,2-Trichlorotrifluoroethane	<	0.2	0.2	ug/L	16-APR-07 13:39
1,2,4-Trimethylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:39
1,3,5-Trimethylbenzene	<	0.5	0.5	ug/L	16-APR-07 13:39
Vinyl chloride	<	0.2	0.2	ug/L	16-APR-07 13:39
o-Xylene	<	0.2	0.2	ug/L	16-APR-07 13:39
p&m-Xylene	<	0.3	0.3	ug/L	16-APR-07 13:39

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\*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
Date Generated: 26-APR-2007  
Request Page: 10 of 27  
Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706713 Receiving Comments: ENRICHED TRITIUM

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1620	2(330')	TRITIUM
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

(Results Not Yet Reported)  
Unit: ADMINISTRATIVE  
981 Analyses sent to private lab  
995 Admin. Consultation

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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## Minnesota Department of Health - Environmental Laboratory

### Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 11 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706714 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1800	3(400')	VOC
Trip Blank	Field Blank		
-	-		

#### \*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
4-Bromofluorobenzene (surrogate)		78.6	70-130	%	16-APR-07 14:10
Dibromofluoromethane (surrogate)		86.3	70-130	%	16-APR-07 14:10
Toluene-D8 (surrogate)		81.2	70-130	%	16-APR-07 14:10
1,2-Dichlorobenzene-D4 (surrogate)		84.3	70-130	%	16-APR-07 14:10
1,2-Dichloroethane-D4 (surrogate)		87.0	70-130	%	16-APR-07 14:10
Acetone	<	20	20	ug/L	16-APR-07 14:10
Allyl chloride	<	0.5	0.5	ug/L	16-APR-07 14:10
Benzene	<	0.2	0.2	ug/L	16-APR-07 14:10
Bromobenzene	<	0.2	0.2	ug/L	16-APR-07 14:10
Bromochloromethane	<	0.5	0.5	ug/L	16-APR-07 14:10
Bromodichloromethane	<	0.2	0.2	ug/L	16-APR-07 14:10
Bromoform	<	0.5	0.5	ug/L	16-APR-07 14:10
Bromomethane	<	1.0	1.0	ug/L	16-APR-07 14:10
n-Butylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:10
sec-Butylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:10
tert-Butylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:10
Carbon tetrachloride	<	0.2	0.2	ug/L	16-APR-07 14:10
Chlorobenzene	<	0.2	0.2	ug/L	16-APR-07 14:10
Chlorodibromomethane	<	0.5	0.5	ug/L	16-APR-07 14:10
Chloroethane	<	0.5	0.5	ug/L	16-APR-07 14:10
Chloroform	<	0.1	0.1	ug/L	16-APR-07 14:10

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 12 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706714 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1800	3 (400')	VOC
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
Chloromethane	<	1.0	1.0	ug/L	16-APR-07 14:10
2-Chlorotoluene	<	0.5	0.5	ug/L	16-APR-07 14:10
4-Chlorotoluene	<	0.5	0.5	ug/L	16-APR-07 14:10
1,2-Dibromo-3-chloropropane (DBCP)	<	2.0	2.0	ug/L	16-APR-07 14:10
1,2-Dibromoethane (EDB)	<	0.5	0.5	ug/L	16-APR-07 14:10
Dibromomethane	<	0.5	0.5	ug/L	16-APR-07 14:10
1,2-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 14:10
1,3-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 14:10
1,4-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 14:10
Dichlorodifluoromethane	<	1.0	1.0	ug/L	16-APR-07 14:10
1,1-Dichloroethane	<	0.2	0.2	ug/L	16-APR-07 14:10
1,2-Dichloroethane	<	0.2	0.2	ug/L	16-APR-07 14:10
1,1-Dichloroethene	<	0.5	0.5	ug/L	16-APR-07 14:10
cis-1,2-Dichloroethene	<	0.2	0.2	ug/L	16-APR-07 14:10
trans-1,2-Dichloroethene	<	0.1	0.1	ug/L	16-APR-07 14:10
Dichlorofluoromethane	<	0.5	0.5	ug/L	16-APR-07 14:10
1,2-Dichloropropane	<	0.2	0.2	ug/L	16-APR-07 14:10
1,3-Dichloropropane	<	0.2	0.2	ug/L	16-APR-07 14:10
2,2-Dichloropropane	<	0.5	0.5	ug/L	16-APR-07 14:10
1,1-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 14:10
cis-1,3-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 14:10

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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# Minnesota Department Of Health - Environmental Laboratory

## Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 13 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706714 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1800	3 (400')	VOC
Trip Blank	Field Blank		
-	-		

### \*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
trans-1,3-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 14:10
Ethylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:10
Ethyl ether	<	2.0	2.0	ug/L	16-APR-07 14:10
Hexachlorobutadiene	<	1.0	1.0	ug/L	16-APR-07 14:10
Isopropylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:10
p-Isopropyltoluene	<	0.5	0.5	ug/L	16-APR-07 14:10
Methylene chloride	<	0.5	0.5	ug/L	16-APR-07 14:10
Methyl ethyl ketone (MEK)	<	10	10	ug/L	16-APR-07 14:10
Methyl isobutyl ketone (MIBK)	<	5.0	5.0	ug/L	16-APR-07 14:10
Methyl tertiary butyl ether (MTBE)	<	2.0	2.0	ug/L	16-APR-07 14:10
Naphthalene	<	1.0	1.0	ug/L	16-APR-07 14:10
n-Propylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:10
Styrene	<	0.5	0.5	ug/L	16-APR-07 14:10
1,1,1,2-Tetrachloroethane	<	0.2	0.2	ug/L	16-APR-07 14:10
1,1,2,2-Tetrachloroethane	<	0.2	0.2	ug/L	16-APR-07 14:10
Tetrachloroethene	<	0.2	0.2	ug/L	16-APR-07 14:10
Tetrahydrofuran (THF)	<	10	10	ug/L	16-APR-07 14:10
<b>Toluene</b>	J	0.2	0.5	ug/L	16-APR-07 14:10
1,2,3-Trichlorobenzene	<	1.0	1.0	ug/L	16-APR-07 14:10
1,2,4-Trichlorobenzene	<	0.5	0.5	ug/L	16-APR-07 14:10
1,1,1-Trichloroethane	<	0.2	0.2	ug/L	16-APR-07 14:10

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 14 of 27  
 Date Reported:

**Samples:** 200706710 - 200706717

<u>Site ID</u>	<u>Project Name</u>	<u>Sampled By</u>
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

**Sample No:** 200706714 **Receiving Comments:** LOW LEVEL VOC

<u>Coll Date</u>	<u>Coll Time</u>	<u>Field No</u>	<u>Sampling Point</u>
05-APR-2007	1800	3 (400')	VOC
<u>Trip Blank</u>	<u>Field Blank</u>		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

**Unit:** ORGANIC CHEMISTRY

**Note:** Positive Organic Results are indicated by BOLD.

Result Codes	Result	Rept Level	Units	Analysis Date
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468 VOCs in Water by GC/MS

1,1,2-Trichloroethane	< 0.2	0.2	ug/L	16-APR-07 14:10
Trichloroethene (TCE)	< 0.1	0.1	ug/L	16-APR-07 14:10
Trichlorofluoromethane	< 0.5	0.5	ug/L	16-APR-07 14:10
1,2,3-Trichloropropane	< 0.5	0.5	ug/L	16-APR-07 14:10
1,1,2-Trichlorotrifluoroethane	< 0.2	0.2	ug/L	16-APR-07 14:10
1,2,4-Trimethylbenzene	< 0.5	0.5	ug/L	16-APR-07 14:10
1,3,5-Trimethylbenzene	< 0.5	0.5	ug/L	16-APR-07 14:10
Vinyl chloride	< 0.2	0.2	ug/L	16-APR-07 14:10
o-Xylene	< 0.2	0.2	ug/L	16-APR-07 14:10
p&m-Xylene	< 0.3	0.3	ug/L	16-APR-07 14:10

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\*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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# Minnesota Department Of Health - Environmental Laboratory

## Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
Date Generated: 26-APR-2007  
Request Page: 15 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706715 Receiving Comments: ENRICHED TRITIUM

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1800	3(400')	TRITIUM
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

(Results Not Yet Reported)  
Unit: ADMINISTRATIVE  
981 Analyses sent to private lab  
995 Admin. Consultation

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 16 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706716 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1910	4 (440')	VOC
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

Result  
Codes

468 VOCs in Water by GC/MS

Result Rept Level Units Analysis Date

4-Bromofluorobenzene (surrogate)	77.6	70-130	%	16-APR-07 14:40
1,2-Dichloroethane-D4 (surrogate)	85.5	70-130	%	16-APR-07 14:40
Dibromofluoromethane (surrogate)	85.1	70-130	%	16-APR-07 14:40
Toluene-D8 (surrogate)	82.0	70-130	%	16-APR-07 14:40
1,2-Dichlorobenzene-D4 (surrogate)	83.9	70-130	%	16-APR-07 14:40
Acetone	< 20	20	ug/L	16-APR-07 14:40
Allyl chloride	< 0.5	0.5	ug/L	16-APR-07 14:40
Benzene	< 0.2	0.2	ug/L	16-APR-07 14:40
Bromobenzene	< 0.2	0.2	ug/L	16-APR-07 14:40
Bromochloromethane	< 0.5	0.5	ug/L	16-APR-07 14:40
Bromodichloromethane	< 0.2	0.2	ug/L	16-APR-07 14:40
Bromoform	< 0.5	0.5	ug/L	16-APR-07 14:40
Bromomethane	< 1.0	1.0	ug/L	16-APR-07 14:40
n-Butylbenzene	< 0.5	0.5	ug/L	16-APR-07 14:40
sec-Butylbenzene	< 0.5	0.5	ug/L	16-APR-07 14:40
tert-Butylbenzene	< 0.5	0.5	ug/L	16-APR-07 14:40
Carbon tetrachloride	< 0.2	0.2	ug/L	16-APR-07 14:40
Chlorobenzene	< 0.2	0.2	ug/L	16-APR-07 14:40
Chlorodibromomethane	< 0.5	0.5	ug/L	16-APR-07 14:40
Chloroethane	< 0.5	0.5	ug/L	16-APR-07 14:40
Chloroform	< 0.1	0.1	ug/L	16-APR-07 14:40

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 17 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706716 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1910	4(440')	VOC

Trip Blank	Field Blank
-	-

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
Chloromethane	<	1.0	1.0	ug/L	16-APR-07 14:40
2-Chlorotoluene	<	0.5	0.5	ug/L	16-APR-07 14:40
4-Chlorotoluene	<	0.5	0.5	ug/L	16-APR-07 14:40
1,2-Dibromo-3-chloropropane (DBCP)	<	2.0	2.0	ug/L	16-APR-07 14:40
1,2-Dibromoethane (EDB)	<	0.5	0.5	ug/L	16-APR-07 14:40
Dibromomethane	<	0.5	0.5	ug/L	16-APR-07 14:40
1,2-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 14:40
1,3-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 14:40
1,4-Dichlorobenzene	<	0.2	0.2	ug/L	16-APR-07 14:40
Dichlorodifluoromethane	<	1.0	1.0	ug/L	16-APR-07 14:40
1,1-Dichloroethane	<	0.2	0.2	ug/L	16-APR-07 14:40
1,2-Dichloroethane	<	0.2	0.2	ug/L	16-APR-07 14:40
1,1-Dichloroethene	<	0.5	0.5	ug/L	16-APR-07 14:40
cis-1,2-Dichloroethene	<	0.2	0.2	ug/L	16-APR-07 14:40
trans-1,2-Dichloroethene	<	0.1	0.1	ug/L	16-APR-07 14:40
Dichlorofluoromethane	<	0.5	0.5	ug/L	16-APR-07 14:40
1,2-Dichloropropane	<	0.2	0.2	ug/L	16-APR-07 14:40
1,3-Dichloropropane	<	0.2	0.2	ug/L	16-APR-07 14:40
2,2-Dichloropropane	<	0.5	0.5	ug/L	16-APR-07 14:40
1,1-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 14:40
cis-1,3-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 14:40

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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# Minnesota Department Of Health - Environmental Laboratory

## Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 18 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706716 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1910	4(440')	VOC
Trip Blank	Field Blank		
-	-		

### \*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
trans-1,3-Dichloropropene	<	0.2	0.2	ug/L	16-APR-07 14:40
Ethylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:40
Ethyl ether	<	2.0	2.0	ug/L	16-APR-07 14:40
Hexachlorobutadiene	<	1.0	1.0	ug/L	16-APR-07 14:40
Isopropylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:40
p-Isopropyltoluene	<	0.5	0.5	ug/L	16-APR-07 14:40
Methylene chloride	<	0.5	0.5	ug/L	16-APR-07 14:40
Methyl ethyl ketone (MEK)	<	10	10	ug/L	16-APR-07 14:40
Methyl isobutyl ketone (MIBK)	<	5.0	5.0	ug/L	16-APR-07 14:40
Methyl tertiary butyl ether (MTBE)	<	2.0	2.0	ug/L	16-APR-07 14:40
Naphthalene	<	1.0	1.0	ug/L	16-APR-07 14:40
n-Propylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:40
Styrene	<	0.5	0.5	ug/L	16-APR-07 14:40
1,1,1,2-Tetrachloroethane	<	0.2	0.2	ug/L	16-APR-07 14:40
1,1,2,2-Tetrachloroethane	<	0.2	0.2	ug/L	16-APR-07 14:40
Tetrachloroethene	<	0.2	0.2	ug/L	16-APR-07 14:40
Tetrahydrofuran (THF)	<	10	10	ug/L	16-APR-07 14:40
<b>Toluene</b>	J	<b>0.2</b>	<b>0.5</b>	<b>ug/L</b>	<b>16-APR-07 14:40</b>
1,2,3-Trichlorobenzene	<	1.0	1.0	ug/L	16-APR-07 14:40
1,2,4-Trichlorobenzene	<	0.5	0.5	ug/L	16-APR-07 14:40
1,1,1-Trichloroethane	<	0.2	0.2	ug/L	16-APR-07 14:40

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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Minnesota Department Of Health - Environmental Laboratory

Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 19 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706716 Receiving Comments: LOW LEVEL VOC

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1910	4(440')	VOC
Trip Blank	Field Blank		
-	-		

\*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

Unit: ORGANIC CHEMISTRY

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
1,1,2-Trichloroethane	<	0.2	0.2	ug/L	16-APR-07 14:40
Trichloroethene (TCE)	<	0.1	0.1	ug/L	16-APR-07 14:40
Trichlorofluoromethane	<	0.5	0.5	ug/L	16-APR-07 14:40
1,2,3-Trichloropropane	<	0.5	0.5	ug/L	16-APR-07 14:40
1,1,2-Trichlorotrifluoroethane	<	0.2	0.2	ug/L	16-APR-07 14:40
1,2,4-Trimethylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:40
1,3,5-Trimethylbenzene	<	0.5	0.5	ug/L	16-APR-07 14:40
Vinyl chloride	<	0.2	0.2	ug/L	16-APR-07 14:40
o-Xylene	<	0.2	0.2	ug/L	16-APR-07 14:40
p&m-Xylene	<	0.3	0.3	ug/L	16-APR-07 14:40

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\*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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## Minnesota Department Of Health - Environmental Laboratory

### Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
Date Generated: 26-APR-2007  
Request Page: 20 of 27  
Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

Sample No: 200706717 Receiving Comments: ENRICHED TRITIUM

Coll Date	Coll Time	Field No	Sampling Point
05-APR-2007	1910	4(440')	TRITIUM
Trip Blank	Field Blank		
-	-		

#### \*\*\*\*\* SAMPLE RESULTS \*\*\*\*\*

(Results Not Yet Reported)  
Unit: ADMINISTRATIVE  
981 Analyses sent to private lab  
995 Admin. Consultation

#### Result Code Description

J The analyte was positively identified. The result is below the report level and is estimated.

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\*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
Date Generated: 26-APR-2007  
Request Page: 21 of 27  
Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

**Report of batch quality control Batch ID: 20070416.11 An: 468**

**All samples analyzed in the batch**

200706372, 200706710, 200706712, 200706714, 200706716, 200706728, 200707192,  
200707193, 200707211, 200707212, 200707222, 200707226

VOCs in Water by GC/MS  
EPA 524.2

Sample	Collection Date	Analysis Date	Analysis Time	Holding Time		Acceptable
200706710	05-APR-07	16-APR-07	11.55	14	DAYS	Y
200706712	05-APR-07	16-APR-07	11.57	14	DAYS	Y
200706714	05-APR-07	16-APR-07	11.59	14	DAYS	Y
200706716	05-APR-07	16-APR-07	11.61	14	DAYS	Y

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 22 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

**Report of batch quality control Batch ID: 20070416.11 An: 468**

Method Blank	Result	Rept Level	Control Limit
Acetone	< ug/L	20	20
Allyl chloride	< ug/L	0.5	0.5
Benzene	< ug/L	0.2	0.2
Bromobenzene	< ug/L	0.2	0.2
Bromochloromethane	< ug/L	0.5	0.5
Bromodichloromethane	< ug/L	0.2	0.2
Bromoform	< ug/L	0.5	0.5
Bromomethane	< ug/L	1.0	1.0
n-Butylbenzene	< ug/L	0.5	0.5
sec-Butylbenzene	< ug/L	0.5	0.5
tert-Butylbenzene	< ug/L	0.5	0.5
Carbon tetrachloride	< ug/L	0.2	0.2
Chlorobenzene	< ug/L	0.2	0.2
Chlorodibromomethane	< ug/L	0.5	0.5
Chloroethane	< ug/L	0.5	0.5
Chloroform	< ug/L	0.1	0.1
Chloromethane	< ug/L	1.0	1.0
2-Chlorotoluene	< ug/L	0.5	0.5
4-Chlorotoluene	< ug/L	0.5	0.5
1,2-Dibromo-3-chloropropane (DBCP)	< ug/L	2.0	2.0
1,2-Dibromoethane (EDB)	< ug/L	0.5	0.5
Dibromomethane	< ug/L	0.5	0.5
1,2-Dichlorobenzene	< ug/L	0.2	0.2
1,3-Dichlorobenzene	< ug/L	0.2	0.2
1,4-Dichlorobenzene	< ug/L	0.2	0.2

\*\*\*\*\*  
 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 23 of 27

Samples: 200706710 - 200706717

Date Reported:

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

**Report of batch quality control Batch ID: 20070416.11 An: 468**

Method Blank	Result	Rept Level	Control Limit
Dichlorodifluoromethane	< ug/L	1.0	1.0
1,1-Dichloroethane	< ug/L	0.2	0.2
1,2-Dichloroethane	< ug/L	0.2	0.2
1,1-Dichloroethene	< ug/L	0.5	0.5
cis-1,2-Dichloroethene	< ug/L	0.2	0.2
trans-1,2-Dichloroethene	< ug/L	0.1	0.1
Dichlorofluoromethane	< ug/L	0.5	0.5
1,2-Dichloropropane	< ug/L	0.2	0.2
1,3-Dichloropropane	< ug/L	0.2	0.2
2,2-Dichloropropane	< ug/L	0.5	0.5
1,1-Dichloropropene	< ug/L	0.2	0.2
cis-1,3-Dichloropropene	< ug/L	0.2	0.2
trans-1,3-Dichloropropene	< ug/L	0.2	0.2
Ethylbenzene	< ug/L	0.5	0.5
Ethyl ether	< ug/L	2.0	2.0
Hexachlorobutadiene	< ug/L	1.0	1.0
Isopropylbenzene	< ug/L	0.5	0.5
p-Isopropyltoluene	< ug/L	0.5	0.5
Methylene chloride	< ug/L	0.5	0.5
Methyl ethyl ketone (MEK)	< ug/L	10	10
Methyl isobutyl ketone (MIBK)	< ug/L	5.0	5.0
Methyl tertiary butyl ether (MTBE)	< ug/L	2.0	2.0
Naphthalene	< ug/L	1.0	1.0
n-Propylbenzene	< ug/L	0.5	0.5
Styrene	< ug/L	0.5	0.5

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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**Minnesota Department Of Health - Environmental Laboratory**

**Preliminary Report - Client Copy - Report Of Analytical Results**

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 24 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

**Report of batch quality control Batch ID: 20070416.11 An: 468**

Method Blank	Result	Rept Level	Control Limit
1,1,1,2-Tetrachloroethane	< ug/L	0.2	0.2
1,1,2,2-Tetrachloroethane	< ug/L	0.2	0.2
Tetrachloroethene	< ug/L	0.2	0.2
Tetrahydrofuran (THF)	< ug/L	10	10
Toluene	< ug/L	0.5	0.5
1,2,3-Trichlorobenzene	< ug/L	1.0	1.0
1,2,4-Trichlorobenzene	< ug/L	0.5	0.5
1,1,1-Trichloroethane	< ug/L	0.2	0.2
1,1,2-Trichloroethane	< ug/L	0.2	0.2
Trichloroethene (TCE)	< ug/L	0.1	0.1
Trichlorofluoromethane	< ug/L	0.5	0.5
1,2,3-Trichloropropane	< ug/L	0.5	0.5
1,1,2-Trichlorotrifluoroethane	< ug/L	0.2	0.2
1,2,4-Trimethylbenzene	< ug/L	0.5	0.5
1,3,5-Trimethylbenzene	< ug/L	0.5	0.5
Vinyl chloride	< ug/L	0.2	0.2
o-Xylene	< ug/L	0.2	0.2
p&m-Xylene	< ug/L	0.3	0.3

**Laboratory Control Samples**

	Spike Level	Spike %Rec	Dup %Rec	RPD	%Rec Req	RPD Req
Acetone	5 ug/L	72	77	7	70-130	30
Allyl chloride	5 ug/L	107	103	3	70-130	30

Group 298475

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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## Minnesota Department Of Health - Environmental Laboratory

### Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 25 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

**Report of batch quality control Batch ID: 20070416.11 An: 468**

#### Laboratory Control Samples

	Spike Level	Spike ug/L	Spike %Rec	Dup %Rec	RPD	%Rec Req	RPD Req
Benzene	5	ug/L	97	98	1	70-130	30
Bromobenzene	5	ug/L	98	101	3	70-130	30
Bromochloromethane	5	ug/L	108	109	1	70-130	30
Bromodichloromethane	5	ug/L	98	98	0	70-130	30
Bromoform	5	ug/L	94	87	8	70-130	30
Bromomethane	5	ug/L	104	107	3	70-130	30
n-Butylbenzene	5	ug/L	103	99	3	70-130	30
sec-Butylbenzene	5	ug/L	91	88	4	70-130	30
tert-Butylbenzene	5	ug/L	110	107	3	70-130	30
Carbon tetrachloride	5	ug/L	105	98	8	70-130	30
Chlorobenzene	5	ug/L	105	106	1	70-130	30
Chlorodibromomethane	5	ug/L	98	95	3	70-130	30
Chloroethane	5	ug/L	71	70	1	70-130	30
Chloroform	5	ug/L	99	99	0	70-130	30
Chloromethane	5	ug/L	74	75	2	70-130	30
2-Chlorotoluene	5	ug/L	103	101	3	70-130	30
4-Chlorotoluene	5	ug/L	105	103	2	70-130	30
1,2-Dibromo-3-chloropropane (DBCP)	5	ug/L	90	95	5	70-130	30
1,2-Dibromoethane (EDB)	5	ug/L	101	101	0	70-130	30
Dibromomethane	5	ug/L	99	100	1	70-130	30
1,2-Dichlorobenzene	5	ug/L	102	106	4	70-130	30
1,3-Dichlorobenzene	5	ug/L	111	112	1	70-130	30
1,4-Dichlorobenzene	5	ug/L	102	103	1	70-130	30

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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## Minnesota Department Of Health - Environmental Laboratory

### Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 26 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

**Report of batch quality control Batch ID: 20070416.11 An: 468**

#### Laboratory Control Samples

	Spike Level	Spike ug/L	%Rec	Dup %Rec	RPD	%Rec Req	RPD Req
Dichlorodifluoromethane	5	ug/L	74	78	5	70-130	30
1,1-Dichloroethane	5	ug/L	95	93	2	70-130	30
1,2-Dichloroethane	5	ug/L	94	96	3	70-130	30
1,1-Dichloroethene	5	ug/L	105	104	1	70-130	30
cis-1,2-Dichloroethene	5	ug/L	102	102	0	70-130	30
trans-1,2-Dichloroethene	5	ug/L	103	103	0	70-130	30
Dichlorofluoromethane	5	ug/L	91	88	4	70-130	30
1,2-Dichloropropane	5	ug/L	91	90	1	70-130	30
1,3-Dichloropropane	5	ug/L	93	94	2	70-130	30
2,2-Dichloropropane	5	ug/L	108	87	22	70-130	30
1,1-Dichloropropene	5	ug/L	99	98	1	70-130	30
cis-1,3-Dichloropropene	5	ug/L	94	89	5	70-130	30
trans-1,3-Dichloropropene	5	ug/L	83	77	7	70-130	30
Ethylbenzene	5	ug/L	99	98	1	70-130	30
Ethyl ether	5	ug/L	98	99	1	70-130	30
Hexachlorobutadiene	5	ug/L	115	129	12	70-130	30
Isopropylbenzene	5	ug/L	107	103	4	70-130	30
p-Isopropyltoluene	5	ug/L	92	88	4	70-130	30
Methylene chloride	5	ug/L	102	98	4	70-130	30
Methyl ethyl ketone (MEK)	5	ug/L	96	99	3	70-130	30
Methyl isobutyl ketone (MIBK)	5	ug/L	88	84	4	70-130	30
Methyl tertiary butyl ether (MTBE)	5	ug/L	110	106	4	70-130	30
Naphthalene	5	ug/L	88	95	8	70-130	30

Group 298475

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 \*\*\*\*\*PRELIMINARY REPORT\*\*\*\*\*  
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## Minnesota Department Of Health - Environmental Laboratory

### Preliminary Report - Client Copy - Report Of Analytical Results

Program: PL  
 Program Name: MPCA-32 METRO MERLA-SF

Date Received: 06-APR-2007  
 Date Generated: 26-APR-2007  
 Request Page: 27 of 27  
 Date Reported:

Samples: 200706710 - 200706717

Site ID	Project Name	Sampled By
-	EDINA OPC7 TEST WELL	PETER RZEPECKI

**Report of batch quality control Batch ID: 20070416.11 An: 468**

#### Laboratory Control Samples

	Spike Level	Spike ug/L	Spike %Rec	Dup %Rec	RPD	%Rec Req	RPD Req
n-Propylbenzene	5	ug/L	104	100	3	70-130	30
Styrene	5	ug/L	90	88	2	70-130	30
1,1,1,2-Tetrachloroethane	5	ug/L	101	97	4	70-130	30
1,1,2,2-Tetrachloroethane	5	ug/L	74	77	3	70-130	30
Tetrachloroethene	5	ug/L	128	128	0	70-130	30
Tetrahydrofuran (THF)	5	ug/L	95	93	2	70-130	30
Toluene	5	ug/L	96	99	3	70-130	30
1,2,3-Trichlorobenzene	5	ug/L	103	112	8	70-130	30
1,2,4-Trichlorobenzene	5	ug/L	115	125	9	70-130	30
1,1,1-Trichloroethane	5	ug/L	107	104	3	70-130	30
1,1,2-Trichloroethane	5	ug/L	94	94	1	70-130	30
Trichloroethene (TCE)	5	ug/L	108	110	1	70-130	30
Trichlorofluoromethane	5	ug/L	107	110	2	70-130	30
1,2,3-Trichloropropane	5	ug/L	83	81	2	70-130	30
1,1,2-Trichlorotrifluoroethane	5	ug/L	116	115	1	70-130	30
1,2,4-Trimethylbenzene	5	ug/L	90	86	5	70-130	30
1,3,5-Trimethylbenzene	5	ug/L	103	99	3	70-130	30
Vinyl chloride	5	ug/L	86	86	0	70-130	30
o-Xylene	5	ug/L	105	102	2	70-130	30
p&m-Xylene	10	ug/L	109	107	2	70-130	30



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**Pace Analytical Services, Inc.**

1700 Elm Street, Suite 200

Minneapolis, MN 55414

Phone: (612)607-1700

Fax: (612)607-6444

April 13, 2007

Mr. Peter Rzepecki  
STS Consultants, Ltd.  
10900 73rd Ave. North  
Maple Plain, MN 55369

RE: Project: EDINA TEST WELL  
Pace Project No.: 1049323

Dear Mr. Rzepecki:

Enclosed are the analytical results for sample(s) received by the laboratory on April 06, 2007.  
Results reported herein conform to the most current NELAP standards, where applicable, unless  
otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Diane J. Anderson

diane.anderson@pacelabs.com  
Project Manager

Illinois Certification #: 200011

Iowa Certification #: 368

Minnesota Certification #: 027-053-137

Wisconsin Certification #: 999407970

Enclosures

## REPORT OF LABORATORY ANALYSIS

Page 1 of 30

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

**Method:** EPA 6010  
**Description:** 6010 MET ICP  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

### General Information:

4 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/8733

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 1049356001

M0: Matrix spike recovery was outside laboratory control limits.

- MS (Lab ID: 327512)
  - Iron
- MSD (Lab ID: 327513)
  - Iron

P6: Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

- MSD (Lab ID: 327513)
  - Calcium

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

Page 2 of 30

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

**Method:** EPA 6020  
**Description:** 6020 MET ICPMS  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

### General Information:

4 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3020 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/8728

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 1049306001, 1049323003

M0: Matrix spike recovery was outside laboratory control limits.

- MS (Lab ID: 327126)
  - Manganese
  - Silicon
  - Strontium
- MS (Lab ID: 327187)
  - Silicon
- MSD (Lab ID: 327127)
  - Manganese
  - Silicon
  - Strontium

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

## REPORT OF LABORATORY ANALYSIS

Page 3 of 30

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

Method: EPA 6020  
Description: 6020 MET ICPMS  
Client: STS Consultants, Ltd.  
Date: April 13, 2007

Additional Comments:

## REPORT OF LABORATORY ANALYSIS

Page 4 of 30

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

**Method:** EPA 340.2  
**Description:** 340.2 Fluoride, Soluble  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

### General Information:

4 samples were analyzed for EPA 340.2. All samples were received in acceptable condition with any exceptions noted below.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

Page 5 of 30

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

**Method:** SM 2320B  
**Description:** 2320B Alkalinity  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

**General Information:**

4 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

Page 6 of 30

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

**Method:** EPA 325.2  
**Description:** 325.2 Chloride  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

**General Information:**

4 samples were analyzed for EPA 325.2. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

**Method:** EPA 350.1  
**Description:** 350.1 Ammonia  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

### General Information:

4 samples were analyzed for EPA 350.1. All samples were received in acceptable condition with any exceptions noted below.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/4804

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 1049323001, 1049323002

M0: Matrix spike recovery was outside laboratory control limits.

- MS (Lab ID: 327831)
  - Nitrogen, Ammonia
- MS (Lab ID: 327833)
  - Nitrogen, Ammonia
- MSD (Lab ID: 327832)
  - Nitrogen, Ammonia
- MSD (Lab ID: 327834)
  - Nitrogen, Ammonia

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

**Method:** EPA 353.1  
**Description:** 353.1 Nitrate, unpreserved  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

### General Information:

4 samples were analyzed for EPA 353.1. All samples were received in acceptable condition with any exceptions noted below.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WETA/4790

D7: The sample and/or duplicate results for this parameter are less than the reporting limit, calculations are based on estimated values and may be statistically unreliable.

- DUP (Lab ID: 327325)
- Nitrate as N

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

**Method:** EPA 354.1  
**Description:** 354.1 Nitrite unpreserved  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

### General Information:

4 samples were analyzed for EPA 354.1. All samples were received in acceptable condition with any exceptions noted below.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: EDINA TEST WELL

Pace Project No.: 1049323

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**Method:** EPA 365.2

**Description:** 365.2 Total Phosphorus

**Client:** STS Consultants, Ltd.

**Date:** April 13, 2007

**General Information:**

4 samples were analyzed for EPA 365.2. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: EDINA TEST WELL  
Pace Project No.: 1049323

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**Method:** EPA 375.4  
**Description:** 375.4 Sulfate, Turbidimetric  
**Client:** STS Consultants, Ltd.  
**Date:** April 13, 2007

### General Information:

4 samples were analyzed for EPA 375.4. All samples were received in acceptable condition with any exceptions noted below.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/4795

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 1049322001

P6: Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

- MS (Lab ID: 327480)
  - Sulfate
- MSD (Lab ID: 327481)
  - Sulfate

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: EDINA TEST WELL  
Pace Project No.: 1049323

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1049323001	# 1 (280')	Water	04/05/07 15:10	04/06/07 09:20
1049323002	# 2 (330')	Water	04/05/07 16:40	04/06/07 09:20
1049323003	# 3 (400')	Water	04/05/07 18:15	04/06/07 09:20
1049323004	# 4 (440')	Water	04/05/07 19:20	04/06/07 09:20

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: EDINA TEST WELL  
Pace Project No.: 1049323

Lab ID	Sample ID	Method	Analytes Reported
1049323001	# 1 (280')	EPA 325.2	1
		EPA 340.2	1
		EPA 350.1	1
		EPA 353.1	1
		EPA 354.1	1
		EPA 365.2	1
		EPA 375.4	1
		EPA 6010	5
		EPA 6020	6
		SM 2320B	1
1049323002	# 2 (330')	EPA 325.2	1
		EPA 340.2	1
		EPA 350.1	1
		EPA 353.1	1
		EPA 354.1	1
		EPA 365.2	1
		EPA 375.4	1
		EPA 6010	5
		EPA 6020	6
		SM 2320B	1
1049323003	# 3 (400')	EPA 325.2	1
		EPA 340.2	1
		EPA 350.1	1
		EPA 353.1	1
		EPA 354.1	1
		EPA 365.2	1
		EPA 375.4	1
		EPA 6010	5
		EPA 6020	6
		SM 2320B	1
1049323004	# 4 (440')	EPA 325.2	1
		EPA 340.2	1
		EPA 350.1	1
		EPA 353.1	1
		EPA 354.1	1
		EPA 365.2	1
		EPA 375.4	1

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: EDINA TEST WELL  
Pace Project No.: 1049323

Lab ID	Sample ID	Method	Analytes Reported
		EPA 6010	5
		EPA 6020	6
		SM 2320B	1

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: EDINA TEST WELL

Pace Project No.: 1049323

Sample: # 1 (280')		Lab ID: 1049323001		Collected: 04/05/07 15:10		Received: 04/06/07 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b> Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Calcium	67000	ug/L	500	250	1	04/06/07 21:53	04/09/07 10:50	7440-70-2	
Iron	875	ug/L	50.0	25.0	1	04/06/07 21:53	04/09/07 10:50	7439-89-6	
Magnesium	28600	ug/L	500	250	1	04/06/07 21:53	04/09/07 10:50	7439-95-4	
Potassium	ND	ug/L	2500	1250	1	04/06/07 21:53	04/09/07 10:50	7440-09-7	
Sodium	3030	ug/L	1000	500	1	04/06/07 21:53	04/09/07 10:50	7440-23-5	
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3020									
Aluminum	ND	ug/L	4.0	2.0	1	04/06/07 11:51	04/09/07 10:54	7429-90-5	
Barium	81.2	ug/L	0.30	0.15	1	04/06/07 11:51	04/09/07 10:54	7440-39-3	
Lithium	4.2	ug/L	0.10	0.050	1	04/06/07 11:51	04/09/07 10:54	7439-93-2	
Manganese	170	ug/L	0.50	0.25	1	04/06/07 11:51	04/09/07 10:54	7439-96-5	
Silicon	8770	ug/L	250	125	50	04/06/07 11:51	04/09/07 10:25	7440-21-3	
Strontium	105	ug/L	0.10	0.050	1	04/06/07 11:51	04/09/07 10:54	7440-24-6	
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total	328	mg/L	5.0	2.5	1		04/09/07 00:00		
<b>340.2 Fluoride, Soluble</b> Analytical Method: EPA 340.2									
Fluoride	0.15	mg/L	0.10	0.050	1		04/10/07 10:40	16984-48-8	
<b>325.2 Chloride</b> Analytical Method: EPA 325.2									
Chloride	8.2	mg/L	2.0	1.0	1		04/06/07 19:18	16887-00-6	
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.50	0.25	1		04/10/07 20:32	7764-41-7	M0
<b>353.1 Nitrate, unpreserved</b> Analytical Method: EPA 353.1									
Nitrate as N	ND	mg/L	0.10	0.050	1		04/06/07 17:28	14797-55-8	
<b>354.1 Nitrite unpreserved</b> Analytical Method: EPA 354.1									
Nitrite as N	ND	mg/L	0.10	0.050	1		04/06/07 15:58	14797-65-0	
<b>365.2 Total Phosphorus</b> Analytical Method: EPA 365.2									
Phosphorus	0.080	mg/L	0.054	0.027	1		04/09/07 19:10	7723-14-0	
<b>375.4 Sulfate, Turbidimetric</b> Analytical Method: EPA 375.4									
Sulfate	11.6	mg/L	2.5	1.2	1		04/06/07 17:41	14808-79-8	

## ANALYTICAL RESULTS

Project: EDINA TEST WELL

Pace Project No.: 1049323

Sample: # 2 (330")		Lab ID: 1049323002		Collected: 04/05/07 16:40		Received: 04/06/07 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b> Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Calcium	66400	ug/L	500	250	1	04/06/07 21:53	04/09/07 10:54	7440-70-2	
Iron	784	ug/L	50.0	25.0	1	04/06/07 21:53	04/09/07 10:54	7439-89-6	
Magnesium	28600	ug/L	500	250	1	04/06/07 21:53	04/09/07 10:54	7439-95-4	
Potassium	ND	ug/L	2500	1250	1	04/06/07 21:53	04/09/07 10:54	7440-09-7	
Sodium	3080	ug/L	1000	500	1	04/06/07 21:53	04/09/07 10:54	7440-23-5	
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3020									
Aluminum	4.5	ug/L	4.0	2.0	1	04/06/07 11:51	04/09/07 10:59	7429-90-5	
Barium	80.3	ug/L	0.30	0.15	1	04/06/07 11:51	04/09/07 10:59	7440-39-3	
Lithium	4.1	ug/L	0.10	0.050	1	04/06/07 11:51	04/09/07 10:59	7439-93-2	
Manganese	132	ug/L	0.50	0.25	1	04/06/07 11:51	04/09/07 10:59	7439-96-5	
Silicon	8460	ug/L	250	125	50	04/06/07 11:51	04/09/07 10:29	7440-21-3	
Strontium	103	ug/L	0.10	0.050	1	04/06/07 11:51	04/09/07 10:59	7440-24-6	
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total	316	mg/L	5.0	2.5	1		04/09/07 00:00		
<b>340.2 Fluoride, Soluble</b> Analytical Method: EPA 340.2									
Fluoride	0.21	mg/L	0.10	0.050	1		04/10/07 10:40	16984-48-8	
<b>325.2 Chloride</b> Analytical Method: EPA 325.2									
Chloride	5.2	mg/L	2.0	1.0	1		04/06/07 19:18	16887-00-6	
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.50	0.25	1		04/10/07 20:32	7764-41-7	MO
<b>353.1 Nitrate, unpreserved</b> Analytical Method: EPA 353.1									
Nitrate as N	0.12	mg/L	0.10	0.050	1		04/06/07 17:28	14797-55-8	
<b>354.1 Nitrite unpreserved</b> Analytical Method: EPA 354.1									
Nitrite as N	ND	mg/L	0.10	0.050	1		04/06/07 15:58	14797-65-0	
<b>365.2 Total Phosphorus</b> Analytical Method: EPA 365.2									
Phosphorus	0.080	mg/L	0.062	0.031	1		04/09/07 19:03	7723-14-0	
<b>375.4 Sulfate, Turbidimetric</b> Analytical Method: EPA 375.4									
Sulfate	11.0	mg/L	2.5	1.2	1		04/06/07 17:41	14808-79-8	

## ANALYTICAL RESULTS

Project: EDINA TEST WELL

Pace Project No.: 1049323

Sample: # 3 (400')		Lab ID: 1049323003		Collected: 04/05/07 18:15		Received: 04/06/07 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium	63600	ug/L	500	250	1	04/06/07 21:53	04/09/07 10:59	7440-70-2	
Iron	933	ug/L	50.0	25.0	1	04/06/07 21:53	04/09/07 10:59	7439-89-6	
Magnesium	27200	ug/L	500	250	1	04/06/07 21:53	04/09/07 10:59	7439-95-4	
Potassium	ND	ug/L	2500	1250	1	04/06/07 21:53	04/09/07 10:59	7440-09-7	
Sodium	2930	ug/L	1000	500	1	04/06/07 21:53	04/09/07 10:59	7440-23-5	
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3020							
Aluminum	9.8	ug/L	4.0	2.0	1	04/06/07 11:51	04/09/07 11:03	7429-90-5	
Barium	80.4	ug/L	0.30	0.15	1	04/06/07 11:51	04/09/07 11:03	7440-39-3	
Lithium	4.1	ug/L	0.10	0.050	1	04/06/07 11:51	04/09/07 11:03	7439-93-2	
Manganese	125	ug/L	0.50	0.25	1	04/06/07 11:51	04/09/07 11:03	7439-96-5	
Silicon	8440	ug/L	250	125	50	04/06/07 11:51	04/09/07 10:33	7440-21-3	MO
Strontium	102	ug/L	0.10	0.050	1	04/06/07 11:51	04/09/07 11:03	7440-24-6	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total	314	mg/L	5.0	2.5	1		04/09/07 00:00		
<b>340.2 Fluoride, Soluble</b>		Analytical Method: EPA 340.2							
Fluoride	0.16	mg/L	0.10	0.050	1		04/10/07 10:40	16984-48-8	
<b>325.2 Chloride</b>		Analytical Method: EPA 325.2							
Chloride	5.1	mg/L	2.0	1.0	1		04/06/07 19:18	16887-00-6	
<b>350.1 Ammonia</b>		Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.50	0.25	1		04/10/07 20:42	7764-41-7	
<b>353.1 Nitrate, unpreserved</b>		Analytical Method: EPA 353.1							
Nitrate as N	ND	mg/L	0.10	0.050	1		04/06/07 17:28	14797-55-8	
<b>354.1 Nitrite unpreserved</b>		Analytical Method: EPA 354.1							
Nitrite as N	ND	mg/L	0.10	0.050	1		04/06/07 15:58	14797-65-0	
<b>365.2 Total Phosphorus</b>		Analytical Method: EPA 365.2							
Phosphorus	0.084	mg/L	0.058	0.029	1		04/09/07 19:03	7723-14-0	
<b>375.4 Sulfate, Turbidimetric</b>		Analytical Method: EPA 375.4							
Sulfate	10.4	mg/L	2.5	1.2	1		04/06/07 17:41	14808-79-8	

## ANALYTICAL RESULTS

Project: EDINA TEST WELL  
Pace Project No.: 1049323

Sample: # 4 (440')		Lab ID: 1049323004		Collected: 04/05/07 19:20		Received: 04/06/07 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b> Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Calcium	65200	ug/L	500	250	1	04/06/07 21:53	04/09/07 11:04	7440-70-2	
Iron	744	ug/L	50.0	25.0	1	04/06/07 21:53	04/09/07 11:04	7439-89-6	
Magnesium	28200	ug/L	500	250	1	04/06/07 21:53	04/09/07 11:04	7439-95-4	
Potassium	ND	ug/L	2500	1250	1	04/06/07 21:53	04/09/07 11:04	7440-09-7	
Sodium	3020	ug/L	1000	500	1	04/06/07 21:53	04/09/07 11:04	7440-23-5	
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3020									
Aluminum	ND	ug/L	4.0	2.0	1	04/06/07 11:51	04/09/07 11:11	7429-90-5	
Barium	79.7	ug/L	0.30	0.15	1	04/06/07 11:51	04/09/07 11:11	7440-39-3	
Lithium	4.1	ug/L	0.10	0.050	1	04/06/07 11:51	04/09/07 11:11	7439-93-2	
Manganese	127	ug/L	0.50	0.25	1	04/06/07 11:51	04/09/07 11:11	7439-96-5	
Silicon	8550	ug/L	250	125	50	04/06/07 11:51	04/09/07 10:38	7440-21-3	
Strontium	101	ug/L	0.10	0.050	1	04/06/07 11:51	04/09/07 11:11	7440-24-6	
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total	315	mg/L	5.0	2.5	1		04/09/07 00:00		
<b>340.2 Fluoride, Soluble</b> Analytical Method: EPA 340.2									
Fluoride	0.16	mg/L	0.10	0.050	1		04/10/07 10:40	16984-48-8	
<b>325.2 Chloride</b> Analytical Method: EPA 325.2									
Chloride	5.8	mg/L	2.0	1.0	1		04/06/07 19:18	16887-00-6	
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	1.6	mg/L	0.50	0.25	1		04/10/07 20:42	7764-41-7	
<b>353.1 Nitrate, unpreserved</b> Analytical Method: EPA 353.1									
Nitrate as N	ND	mg/L	0.10	0.050	1		04/06/07 17:28	14797-55-8	
<b>354.1 Nitrite unpreserved</b> Analytical Method: EPA 354.1									
Nitrite as N	ND	mg/L	0.10	0.050	1		04/06/07 15:58	14797-65-0	
<b>365.2 Total Phosphorus</b> Analytical Method: EPA 365.2									
Phosphorus	0.23	mg/L	0.055	0.028	1		04/09/07 19:03	7723-14-0	
<b>375.4 Sulfate, Turbidimetric</b> Analytical Method: EPA 375.4									
Sulfate	11.3	mg/L	2.5	1.2	1		04/06/07 17:41	14808-79-8	

### QUALITY CONTROL DATA

Project: EDINA TEST WELL  
Pace Project No.: 1049323

QC Batch: MPRP/8728 Analysis Method: EPA 6020  
QC Batch Method: EPA 3020 Analysis Description: 6020 MET  
Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

#### METHOD BLANK: 327124

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Aluminum	ug/L	ND	4.0	
Barium	ug/L	ND	0.30	
Lithium	ug/L	ND	0.10	
Manganese	ug/L	ND	0.50	
Silicon	ug/L	ND	5.0	
Strontium	ug/L	ND	0.10	

#### LABORATORY CONTROL SAMPLE: 327125

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	80	81.7	102	85-115	
Barium	ug/L	80	78.8	99	85-115	
Lithium	ug/L	80	81.8	102	85-115	
Manganese	ug/L	80	79.9	100	85-115	
Silicon	ug/L	160	159	99	85-115	
Strontium	ug/L	80	80.7	101	85-115	

#### MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327126 327127

Parameter	Units	1049306001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Aluminum	ug/L	10.4	80	80	92.5	93.3	103	104	70-130	.9	20
Barium	ug/L	153	80	80	228	231	93	98	70-130	2	20
Lithium	ug/L	4.3	80	80	89.0	90.2	106	107	70-130	1	20
Manganese	ug/L	2540	80	80	2470	2490	-85	-61	70-130	.8	20 MO
Silicon	ug/L	14300	160	160	13900	14000	-263	-193	70-130	.8	20 MO
Strontium	ug/L	276	80	80	328	330	65	68	70-130	.5	20 MO

#### MATRIX SPIKE SAMPLE: 327187

Parameter	Units	1049323003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	9.8	80	110	125	70-130	
Barium	ug/L	80.4	80	172	115	70-130	
Lithium	ug/L	4.1	80	98.1	118	70-130	
Manganese	ug/L	125	80	222	122	70-130	
Silicon	ug/L	8440	160	10200	1110	70-130 MO	
Strontium	ug/L	102	80	193	115	70-130	

### QUALITY CONTROL DATA

Project: EDINA TEST WELL  
Pace Project No.: 1049323

QC Batch: WETA/4790 Analysis Method: EPA 353.1  
QC Batch Method: EPA 353.1 Analysis Description: 353.1 Nitrate, unpreserved  
Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

METHOD BLANK: 327321

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Nitrate as N	mg/L	ND	0.10	

LABORATORY CONTROL SAMPLE: 327322

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	1	0.92	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327323 327324

Parameter	Units	1049322001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Nitrate as N	mg/L	ND	1	1	0.86	0.90	91	94	80-120	4 30	

SAMPLE DUPLICATE: 327325

Parameter	Units	1049325004 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrate as N	mg/L	ND	.071J	39	30 D7	

### QUALITY CONTROL DATA

Project: EDINA TEST WELL  
Pace Project No.: 1049323

QC Batch: WETA/4791 Analysis Method: EPA 354.1  
QC Batch Method: EPA 354.1 Analysis Description: 354.1 Nitrite, unpreserved  
Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

#### METHOD BLANK: 327326

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Nitrite as N	mg/L	ND	0.10	

#### LABORATORY CONTROL SAMPLE: 327327

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrite as N	mg/L	.3	0.30	101	90-110	

#### MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327328 327329

Parameter	Units	1049323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrite as N	mg/L	ND	.3	.3	0.30	0.30	102	101	80-120	.3	30	

### QUALITY CONTROL DATA

Project: EDINA TEST WELL

Pace Project No.: 1049323

QC Batch:	WETA/4794	Analysis Method:	EPA 325.2
QC Batch Method:	EPA 325.2	Analysis Description:	325.2 Chloride
Associated Lab Samples:	1049323001, 1049323002, 1049323003, 1049323004		

METHOD BLANK: 327471

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Chloride	mg/L	ND	2.0	

LABORATORY CONTROL SAMPLE: 327472

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	30	32.7	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327473 327474

Parameter	Units	1049323001 Result	327473		327474		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	8.2	30	30	41.5	41.9	111	112	80-120	.8	30	

SAMPLE DUPLICATE: 327475

Parameter	Units	1049323002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	5.2	5.0	4	20	

### QUALITY CONTROL DATA

Project: EDINA TEST WELL  
Pace Project No.: 1049323

QC Batch: WETA/4795 Analysis Method: EPA 375.4  
QC Batch Method: EPA 375.4 Analysis Description: 375.4 Sulfate, Turbidimetric  
Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

#### METHOD BLANK: 327478

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Sulfate	mg/L	ND	2.5	

#### LABORATORY CONTROL SAMPLE: 327479

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	7.5	7.4	99	90-110	

#### MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327480 327481

Parameter	Units	1049322001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Max RPD	Qual
Sulfate	mg/L	160	5	5	155	159	-109	-25	80-120	3	30	P6

#### SAMPLE DUPLICATE: 327482

Parameter	Units	1049325004 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	49.3	52.7	7	20	

## QUALITY CONTROL DATA

Project: EDINA TEST WELL

Pace Project No.: 1049323

QC Batch: MPRP/8733 Analysis Method: EPA 6010

QC Batch Method: EPA 3010 Analysis Description: 6010 MET

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

METHOD BLANK: 327510

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Calcium	ug/L	ND	500	
Iron	ug/L	ND	50.0	
Magnesium	ug/L	ND	500	
Potassium	ug/L	ND	2500	
Sodium	ug/L	ND	1000	

LABORATORY CONTROL SAMPLE: 327511

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	8920	89	80-120	
Iron	ug/L	10000	8620	86	80-120	
Magnesium	ug/L	10000	8820	88	80-120	
Potassium	ug/L	10000	8930	89	80-120	
Sodium	ug/L	10000	8270	83	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327512 327513

Parameter	Units	1049356001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Calcium	ug/L	354000	10000	10000	364000	368000	100	140	80-120	1	30 P6
Iron	ug/L	ND	10000	10000	7220	7330	72	73	80-120	2	30 M0
Magnesium	ug/L	85800	10000	10000	93900	94700	81	89	80-120	.8	30
Potassium	ug/L	8200	10000	10000	17200	17500	90	93	80-120	2	30

### QUALITY CONTROL DATA

Project: EDINA TEST WELL

Pace Project No.: 1049323

QC Batch: WET/9314

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

METHOD BLANK: 327687

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Alkalinity, Total	mg/L	ND	5.0	

LABORATORY CONTROL SAMPLE & LCSD: 327688

327689

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total	mg/L	40	42.0	42.0	105	105	80-120	0	30	

MATRIX SPIKE SAMPLE: 327690

Parameter	Units	1049323001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total	mg/L	328	40	368	100	80-120	

SAMPLE DUPLICATE: 327691

Parameter	Units	1049323002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total	mg/L	316	313	1	30	

SAMPLE DUPLICATE: 327692

Parameter	Units	1049314006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total	mg/L	256	257	.4	30	

### QUALITY CONTROL DATA

Project: EDINA TEST WELL  
Pace Project No.: 1049323

QC Batch: WETA/4802 Analysis Method: EPA 365.2  
QC Batch Method: EPA 365.2 Analysis Description: 365.2 Phosphorus  
Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

#### METHOD BLANK: 327789

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Phosphorus	mg/L	ND	0.050	

#### LABORATORY CONTROL SAMPLE: 327790

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	.5	0.51	102	90-110	

#### MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327791 327792

Parameter	Units	1049323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Phosphorus	mg/L	0.080	.5	.5	0.56	0.56	96	97	80-120	.4 30	

#### SAMPLE DUPLICATE: 327793

Parameter	Units	1049323002 Result	Dup Result	RPD	Max RPD	Qualifiers
Phosphorus	mg/L	0.080	0.084	6	30	

## QUALITY CONTROL DATA

Project: EDINA TEST WELL

Pace Project No.: 1049323

QC Batch: WETA/4804 Analysis Method: EPA 350.1  
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia  
Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

METHOD BLANK: 327829

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.50	

LABORATORY CONTROL SAMPLE: 327830

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	2	2.1	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327831 327832

Parameter	Units	1049323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	2	2	2.6	2.8	115	126	90-110	9 30	MO

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327833 327834

Parameter	Units	1049323002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	2	2	2.6	2.7	117	120	90-110	2 30	MO

### QUALITY CONTROL DATA

Project: EDINA TEST WELL  
Pace Project No.: 1049323

QC Batch: WET/9319 Analysis Method: EPA 340.2  
QC Batch Method: EPA 340.2 Analysis Description: 340.2 Fluoride, Soluble  
Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

#### METHOD BLANK: 327922

Associated Lab Samples: 1049323001, 1049323002, 1049323003, 1049323004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Fluoride	mg/L	ND	0.10	

#### LABORATORY CONTROL SAMPLE & LCSD: 327923

327924

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Fluoride	mg/L	1	0.98	0.94	98	94	90-110	5	30	

#### MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 327925

327926

Parameter	Units	1049323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Fluoride	mg/L	0.15	1	1	1.2	1.2	108	106	80-120	2	20

## QUALIFIERS

Project: EDINA TEST WELL  
Pace Project No.: 1049323

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

### ANALYTE QUALIFIERS

- |    |   |
|----|---|
| D7 | The sample and/or duplicate results for this parameter are less than the reporting limit, calculations are based on estimated values and may be statistically unreliable. |
| M0 | Matrix spike recovery was outside laboratory control limits.  |
| P6 | Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.                                     |

## REPORT OF LABORATORY ANALYSIS

Page 30 of 30

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1241 Bellevue Street, Suite 9  
Green Bay, WI 54302  
920-469-2436, Fax: 920-469-8827

## Analytical Report Number: 882409

Client: PACE ANALYTICAL SERVICES

Lab Contact: Eric Wied

Project Name: STS

Project Number: 1049323

Lab Sample Number	Field ID	Matrix	Collection Date
882409-001	#1 (280') 1049323001	WATER	04/05/07 15:10
882409-002	#2 (330') 1049323002	WATER	04/05/07 16:40
882409-003	#3 (400') 1049323003	WATER	04/05/07 18:15
882409-004	#4 (440') 1049323004	WATER	04/05/07 19:20

MS/MSD: If the Form 3 header for the MS/MSD QC indicates that the MS/MSD was "Batch QC", then the MS/MSD results may not be directly applicable to your samples

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc. The sample results relate only to the analytes of interest tested.

Approval Signature

Date

Page 1 of 10

**Pace Analytical  
Services, Inc.**

**Analytical Report Number: 882409**

1241 Bellevue Street  
Green Bay, WI 54302  
920-469-2436

Client : PACE ANALYTICAL SERVICES

Project Name : STS

Project Number : 1049323

Field ID : #1 (280') 1049323001

Matrix Type : WATER

Collection Date : 04/05/07

Report Date : 04/10/07

Lab Sample Number : 882409-001

---

**INORGANICS**

Test		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Bromide	<	0.25	0.25	1	mg/L		04/09/07	EPA 300.0	EPA 300.0

---

**Pace Analytical  
Services, Inc.**

**Analytical Report Number: 882409**

1241 Bellevue Street  
Green Bay, WI 54302  
920-469-2436

Client : PACE ANALYTICAL SERVICES

Project Name : STS

Project Number : 1049323

Field ID : #2 (330') 1049323002

Matrix Type : WATER

Collection Date : 04/05/07

Report Date : 04/10/07

Lab Sample Number : 882409-002

---

**INORGANICS**

Test		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Bromide	<	0.25	0.25	1	mg/L		04/09/07	EPA 300.0	EPA 300.0

---

**Pace Analytical  
Services, Inc.**

**Analytical Report Number: 882409**

1241 Bellevue Street  
Green Bay, WI 54302  
920-469-2436

**Client : PACE ANALYTICAL SERVICES**

**Project Name : STS**

**Project Number : 1049323**

**Field ID : #3 (400') 1049323003**

**Matrix Type : WATER**

**Collection Date : 04/05/07**

**Report Date : 04/10/07**

**Lab Sample Number : 882409-003**

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**INORGANICS**

<b>Test</b>		<b>Result</b>	<b>EQL</b>	<b>Dilution</b>	<b>Units</b>	<b>Code</b>	<b>Anl Date</b>	<b>Prep Method</b>	<b>Anl Method</b>
Bromide	<	0.25	0.25	1	mg/L		04/09/07	EPA 300.0	EPA 300.0

**Pace Analytical  
Services, Inc.**

**Analytical Report Number: 882409**

1241 Bellevue Street  
Green Bay, WI 54302  
920-469-2436

Client : PACE ANALYTICAL SERVICES

Project Name : STS

Project Number : 1049323

Field ID : #4 (440') 1049323004

Matrix Type : WATER

Collection Date : 04/05/07

Report Date : 04/10/07

Lab Sample Number : 882409-004

---

**INORGANICS**

Test		Result	EQL	Dilution	Units	Code	Anl Date	Prep Method	Anl Method
Bromide	<	0.25	0.25	1	mg/L		04/09/07	EPA 300.0	EPA 300.0

---

## Qualifier Codes

Flag Applies To Explanation

A	Inorganic	Analyte is detected in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
B	Inorganic	The analyte has been detected between the method detection limit and the reporting limit.
B	Organic	Analyte is present in the method blank. Method blank criteria is evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample by sample basis.
C	All	Elevated detection limit.
D	All	Analyte value from diluted analysis or surrogate result not applicable due to sample dilution.
E	Inorganic	Estimated concentration due to matrix interferences. During the metals analysis the serial dilution failed to meet the established control limits of 0-10%. The sample concentration is greater than 50 times the IDL for analysis done on the ICP or 100 times the IDL for analysis done on the ICP-MS. The result was flagged with the E qualifier to indicate that a physical interference was observed.
E	Organic	Analyte concentration exceeds calibration range.
F	Inorganic	Due to potential interferences for this analysis by Inductively Coupled Plasma techniques (SW-846 Method 6010), this analyte has been confirmed by and reported from an alternate method.
F	Organic	Surrogate results outside control criteria.
G	All	The result is estimated because the concentration is less than the lowest calibration standard concentration utilized in the initial calibration. The method detection limit is less than the reporting limit specified for this project.
H	All	Preservation, extraction or analysis performed past holding time.
HF	Inorganic	This test is considered a field parameter, and the recommended holding time is 15 minutes from collection. The analysis was performed in the laboratory beyond the recommended holding time.
J	All	Concentration detected equal to or greater than the method detection limit but less than the reporting limit.
K	Organic	Detection limit may be elevated due to the presence of an unrequested analyte.
L	All	Elevated detection limit due to low sample volume.
M	Organic	Sample pH was greater than 2
N	All	Spiked sample recovery not within control limits.
O	Organic	Sample received overweight.
P	Organic	The relative percent difference between the two columns for detected concentrations was greater than 40%.
Q	All	The analyte has been detected between the limit of detection (LOD) and limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.
S	Organic	The relative percent difference between quantitation and confirmation columns exceeds internal quality control criteria. Because the result is unconfirmed, it has been reported as a non-detect with an elevated detection limit.
U	All	The analyte was not detected at or above the reporting limit.
V	All	Sample received with headspace.
W	All	A second aliquot of sample was analyzed from a container with headspace.
X	All	See Sample Narrative.
Z	Organics	This compound was separated in the check standard but it did not meet the resolution criteria as set forth in SW846.
&	All	Laboratory Control Spike recovery not within control limits.
*	All	Precision not within control limits.
+	Inorganic	The sample result is greater than four times the spike level; therefore, the percent recovery is not evaluated.
<	All	The analyte was not detected at or above the reporting limit.
1	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses passed QC based on precision criteria.
2	Inorganic	Dissolved analyte or filtered analyte greater than total analyte; analyses failed QC based on precision criteria.
3	Inorganic	BOD result is estimated due to the BOD blank exceeding the allowable oxygen depletion.
4	Inorganic	BOD duplicate precision not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
5	Inorganic	BOD result is estimated due to insufficient oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
6	Inorganic	BOD laboratory control sample not within control limits. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
7	Inorganic	BOD result is estimated due to complete oxygen depletion. Due to the 48 hour holding time for this test, it is not practical to reanalyze and try to correct the deficiency.
8	Inorganic	Sample was received unpreserved. Sample was preserved either at the time of receipt or at the time of sample preparation.
9	Inorganic	Sample was received with insufficient preservation. Acid was added either at the time of receipt or at the time of sample preparation.

Test Group Name	882409-001	882409-002	882409-003	882409-004
BROMIDE	B	B	B	B

Code	MN Certification
B	055-999-334

**Pace Analytical  
Services, Inc.**

**QC Summary**

1241 Bellevue Street  
Green Bay, WI 54302  
920-469-2436  
Fax: 920-469-8827

Batch: 882409  
Lab Section: WETCHEM  
QC Batch Number: 19566  
Prep Method: EPA 300.0  
Analytical Method: EPA 300.0

QC Type	Client Sample ID	Lab Sample ID
MB	WCG2138-086MB	WCG2138-086MB
LCS	WCG2138-086MBLCS	WCG2138-086MBLCS
MS	882323-016MS	882323-016MS
MS	882323-012MS	882323-012MS
MSD	882323-016MSD	882323-016MSD
MSD	882323-012MSD	882323-012MSD

Client Sample ID	Lab Sample ID	MB ID
#1 (280') 1049323001	882409-001	MB
#3 (400') 1049323003	882409-003	MB

Client Sample ID
#2 (330') 1049323002
#4 (440') 1049323004

Lab Sample ID	MB ID
882409-002	MB
882409-004	MB

Test Name		Method Blank Result Conc	LCS Spiked Conc	LCS Recovery Conc % C			LCSD Spiked Conc	LCSD Recovery Conc % C			LCS/ LCSD RPD % C	LCS/LCSD Control Limits			Parent Sample Number	Parent Result Conc	MS Spiked Conc	MS Recovery Conc % C			MSD Spiked Conc	MSD Recovery Conc % C			MS/ MSD RPD % C	MS/MSD Control Limits		
												LCL %	UCL %	RPD %												LCL %	UCL %	RPD %
Bromide	<	0.25	2.0	2	101.0	—	—	—	—	—	90	110	20	882323-012	<	0.1	2.0	1.9	93.0	2.0	1.8	92.0		1.1	90	110	20	
Bromide	<	0.25	2.0	2	101.0	—	—	—	—	—	90	110	20	882323-016	<	0.1	2.0	1.8	91.5	2.0	1.6	79.5	N	14.0	90	110	20	

Conc = mg/L unless otherwise noted

C = QC Code, see Qualifier Sheet

Parent Result is reported down to MDL in order to allow Validation of this worksheet

The %R and RPD results are calculated from raw data values with more significant figures than are reported on this form.

Report Date: 4/10/2007

QC Batch Number: 19566



## Sample Condition Upon Receipt

Client Name: Pace

Project #

882409Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ noPacking Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other \_\_\_\_\_

Thermometer Used

JBType of Ice: Wet Blue None☒ Samples on ice, cooling process has begun

Cooler Temperature

0.5

Biological Tissue Is Frozen: Yes No

Date and Initials of person examining

contents: LM 4-5-07

Temp should be above freezing to 6°C

Comments:

14C 4/7/07

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>Date Needed 4-13-07</u>
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_

Date:

04.09.07

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)







Client Name: STS CONSULTANTS Project # 1049323

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☒ Other \_\_\_\_\_

Thermometer Used 230194010

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Cooler Temperature 2.5

Biological Tissue Is Frozen: Yes No

Date and Initials of person completing contents: 7-6-07

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sample Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (-24hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Push Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>yes - Nitrate, Nitrite dm</u>
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Filtered volume needed for Disposed tests:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
-Include date/time of analysis	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
All containers requiring preservation have been checked:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
All containers needing preservation are found to be in compliance with EPA recommendation:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
exceptions: VOA, coliform, TOC, O&G, W-DRD (water)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>K</u> Lot # of added preservative
Samples checked for decontamination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17.
Headspace in VOA Vials (-24hr):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	19.
Trip Blank Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20.
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Admin # SFST0703

Project Manager Review: \_\_\_\_\_

Date: 4/6/07

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

F-ALLC003rev.3, 11 September 2006



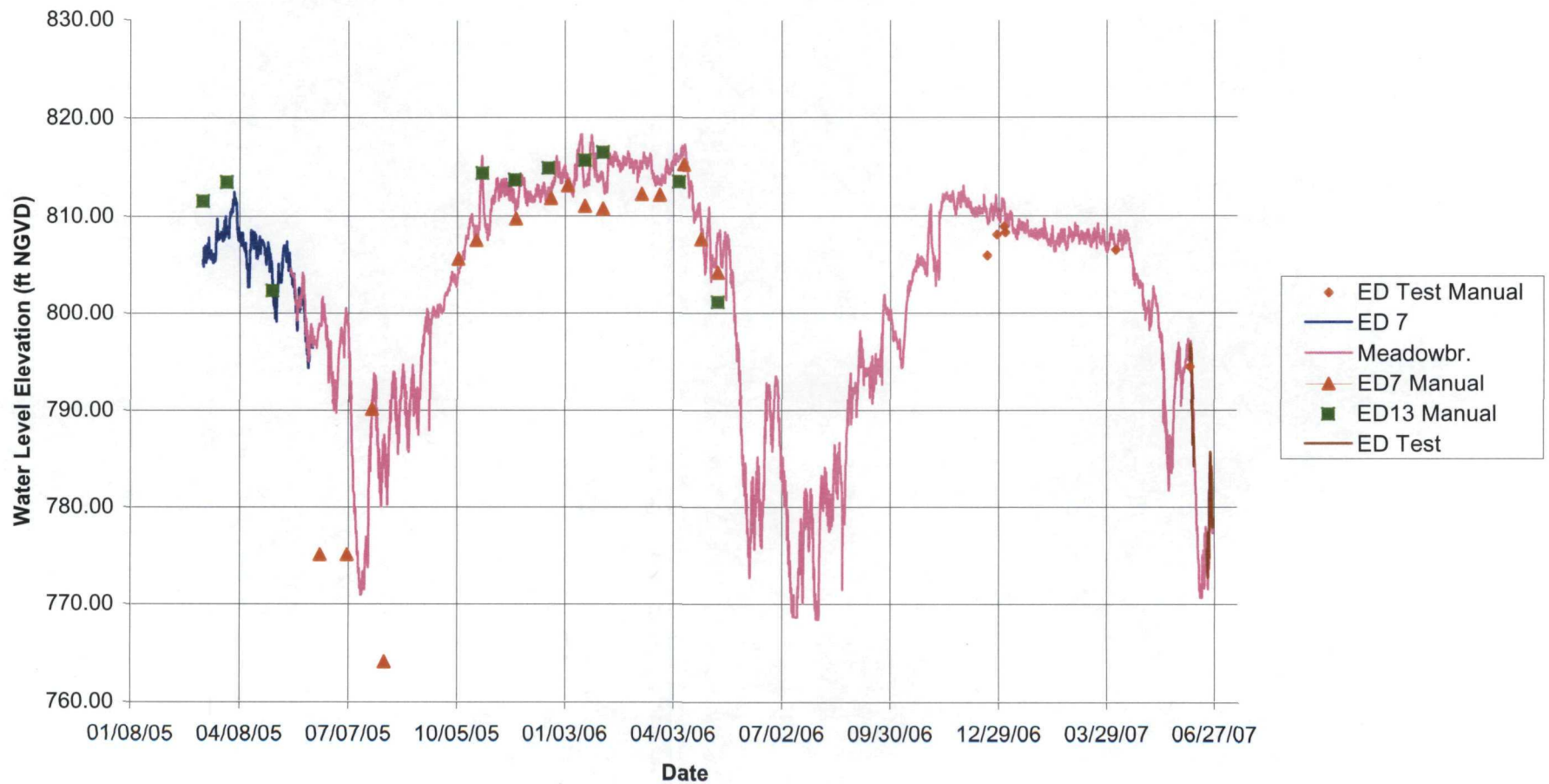
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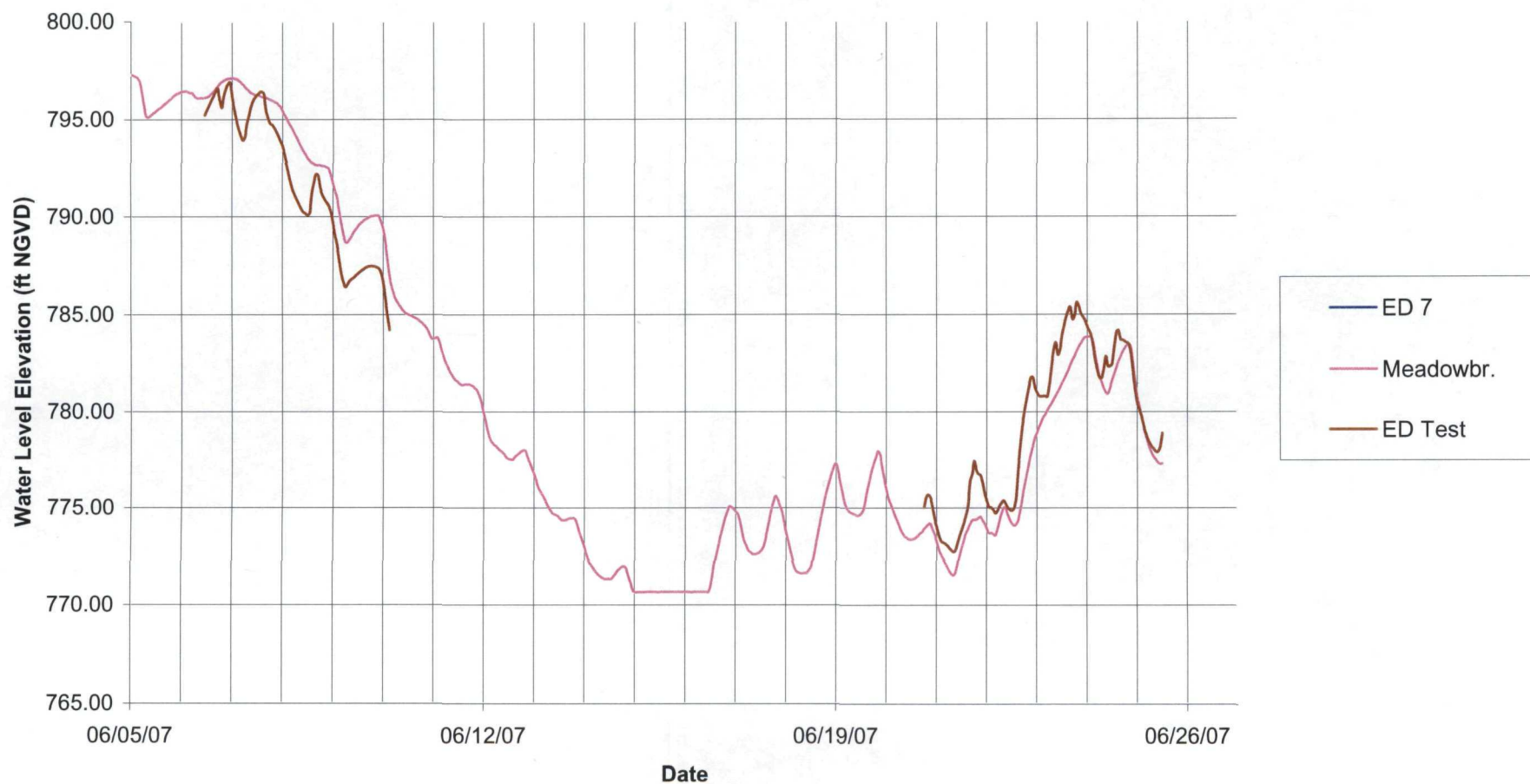
**Appendix E, Figure 1. Edina Well No. 7, Edina Well No. 13, Meadowbrook Golf Course Well (W119) and Edina OPCJ Test Well Hydrographs**

**Construction and testing of the Edina OPCJ Test Well  
STS Project No. 200605032**



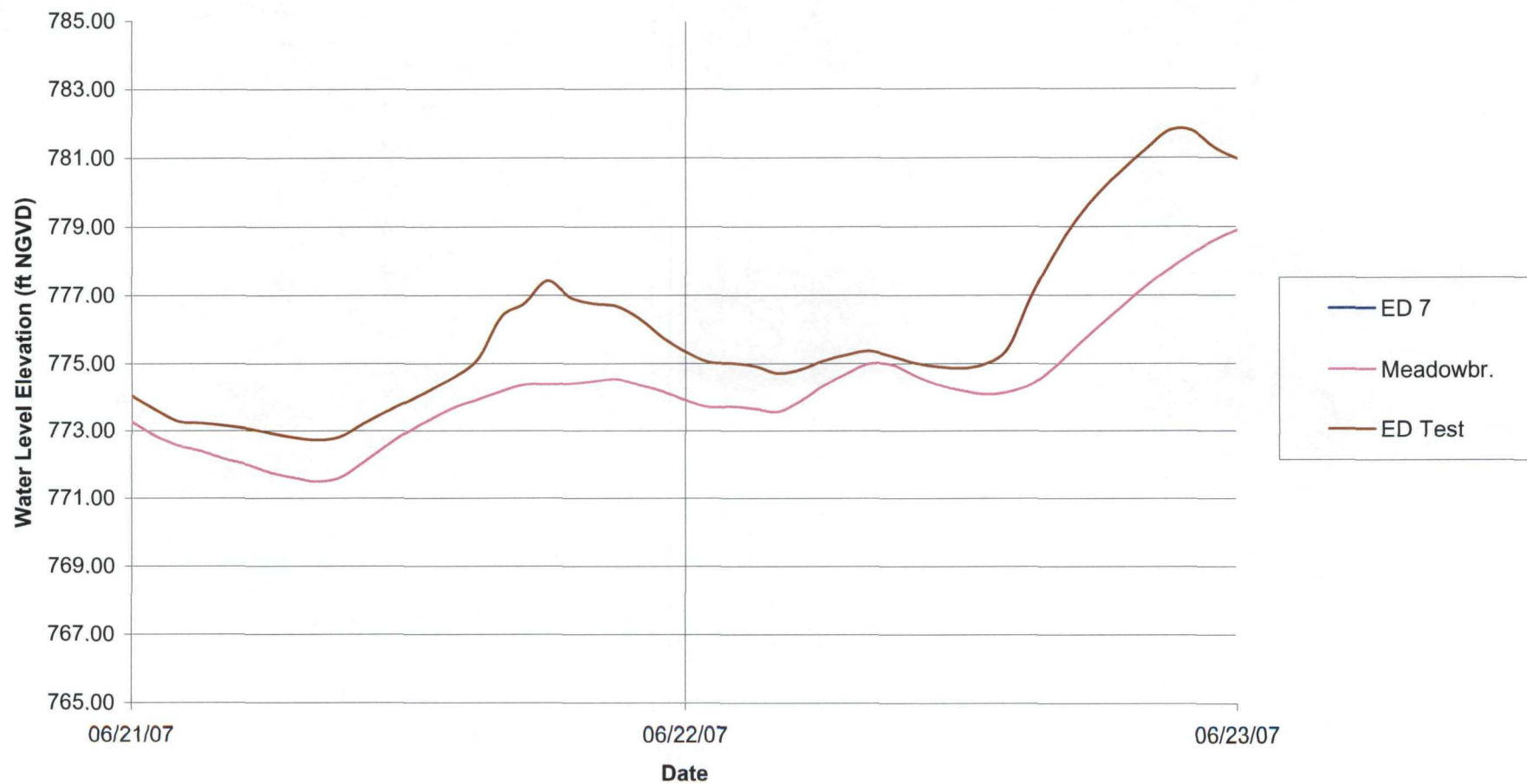
**Appendix E, Figure 2. Meadowbrook Golf Course Well (W119) and Edina OPCJ Test Well  
Hydrographs - June 2007**

**Construction and testing of the Edina OPCJ Test Well  
STS Project No. 200605032**



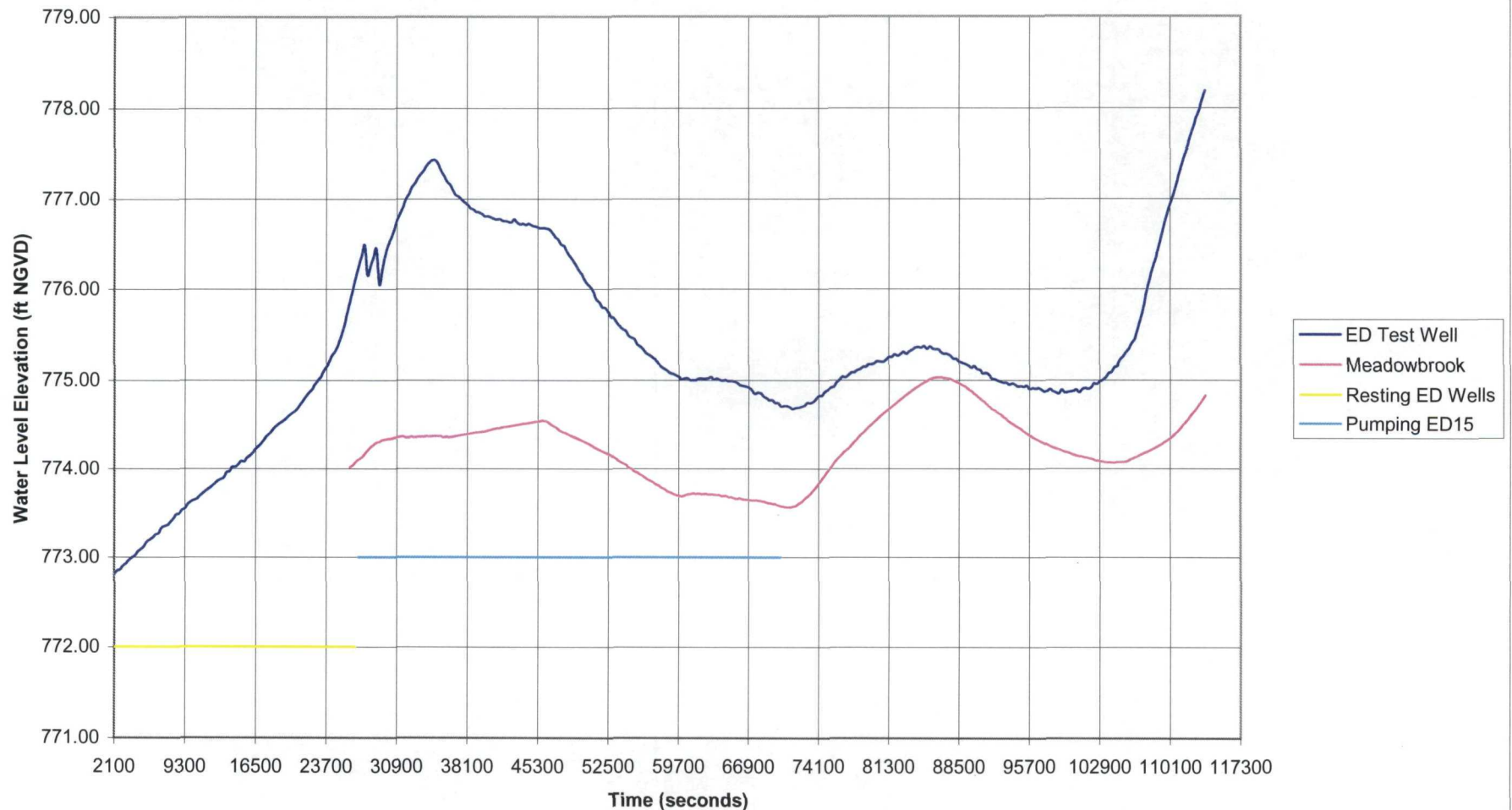
**Appendix E, Figure 3. Meadowbrook Golf Course Well (W119) and Edina OPCJ Test Well  
Hydrographs before, during and after pumping from Edina 15 - June 21 and 22, 2007**

**Construction and testing of the Edina OPCJ Test Well  
STS Project No. 200605032**



**Appendix E, Figure 4. Meadowbrook Golf Course Well (W119) and Edina OPCJ Test Well  
Hydrographs before, during and after pumping from Edina 15 - June 21 and 22, 2007**

**Construction and testing of the Edina OPCJ Test Well STS Project No. 200605032**





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**Construction and testing of the Edina OPCJ Test Well**  
**STS Project No. 200605032**  
**Aquifer Test Performed on June 21-22, 2007**

The City of Edina Well No. 15 was pumped for 12 hours at the rate of 950 gpm  
Water levels were measured in the Edina OPCJ Test Well and the Meadowbrook Golf Course Well

Static water level in the Edina OPCJ Test Well was assumed to be 777.43 ft (the maximum water level elevation measured during pumping test - See Appendix F, Figure 4)

Static water level in the Meadowbrook Golf Course Well was assumed to be 775.03 (the maximum water level elevation measured during the first recovery period - See Appendix F, Figure 4)

Time	Cumulative Time (pump test)	Cumulative Time (recovery test)	Edina OPCJ Test Well			Meadowbrook Golf Course Well		
			Water Elevation	Drawdown	Drawdown	Water Elevation	Drawdown	Drawdown
	[min]	[min]	[feet]	[feet]	[meters]	[feet]	[feet]	[meters]
4:55:25 PM	2		776.25	1.18	0.36	774.11	0.92	0.28
5:00:25 PM	7		776.37	1.06	0.32	774.13	0.90	0.27
5:05:25 PM	12		776.49	0.94	0.29	774.17	0.86	0.26
5:10:25 PM	17		776.16	1.27	0.39	774.21	0.82	0.25
5:15:25 PM	22		776.25	1.18	0.36	774.24	0.79	0.24
5:20:25 PM	27		776.35	1.08	0.33	774.27	0.76	0.23
5:25:25 PM	32		776.45	0.98	0.30	774.29	0.74	0.22
5:30:25 PM	37		776.05	1.38	0.42	774.30	0.73	0.22
5:35:25 PM	42		776.22	1.21	0.37	774.33	0.70	0.21
5:40:25 PM	47		776.37	1.06	0.32	774.33	0.70	0.21
5:45:25 PM	52		776.49	0.94	0.29	774.34	0.69	0.21
5:50:25 PM	57		776.57	0.86	0.26	774.34	0.69	0.21
5:55:25 PM	62		776.66	0.77	0.24	774.35	0.68	0.21
6:00:25 PM	67		776.77	0.66	0.20	774.35	0.68	0.21
6:05:25 PM	72		776.84	0.59	0.18	774.36	0.67	0.20
6:10:25 PM	77		776.91	0.52	0.16	774.36	0.67	0.20
6:15:25 PM	82		777.00	0.43	0.13	774.35	0.68	0.21
6:20:25 PM	87		777.05	0.38	0.11	774.35	0.68	0.21
6:25:25 PM	92		777.13	0.30	0.09	774.36	0.67	0.20
6:30:25 PM	97		777.17	0.26	0.08	774.35	0.68	0.21
6:35:25 PM	102		777.23	0.20	0.06	774.36	0.67	0.20
6:40:25 PM	107		777.27	0.16	0.05	774.36	0.67	0.20
6:45:25 PM	112		777.31	0.12	0.04	774.36	0.67	0.20
6:50:25 PM	117		777.37	0.06	0.02	774.37	0.66	0.20
6:55:25 PM	122		777.40	0.03	0.01	774.36	0.67	0.20
7:00:25 PM	127		777.43	0.00	0.00	774.37	0.66	0.20
7:05:25 PM	132		777.43	0.00	0.00	774.37	0.66	0.20
7:10:25 PM	137		777.39	0.04	0.01	774.37	0.66	0.20
7:15:25 PM	142		777.31	0.12	0.04	774.37	0.66	0.20
7:20:25 PM	147		777.26	0.17	0.05	774.35	0.68	0.21
7:25:25 PM	152		777.19	0.24	0.07	774.36	0.67	0.20
7:30:25 PM	157		777.16	0.27	0.08	774.35	0.68	0.21
7:35:25 PM	162		777.09	0.34	0.10	774.36	0.67	0.20
7:40:25 PM	167		777.04	0.39	0.12	774.37	0.66	0.20
7:45:25 PM	172		777.03	0.40	0.12	774.37	0.66	0.20
7:50:25 PM	177		776.99	0.44	0.13	774.38	0.65	0.20
7:55:25 PM	182		776.96	0.47	0.14	774.38	0.65	0.20
8:00:25 PM	187		776.94	0.50	0.15	774.39	0.64	0.19
8:05:25 PM	192		776.90	0.53	0.16	774.40	0.63	0.19
8:10:25 PM	197		776.88	0.55	0.17	774.40	0.63	0.19
8:15:25 PM	202		776.86	0.57	0.17	774.41	0.62	0.19
8:20:25 PM	207		776.85	0.58	0.18	774.41	0.62	0.19
8:25:25 PM	212		776.83	0.60	0.18	774.42	0.61	0.19
8:30:25 PM	217		776.81	0.63	0.19	774.42	0.61	0.19
8:35:25 PM	222		776.81	0.62	0.19	774.43	0.60	0.18
8:40:25 PM	227		776.80	0.63	0.19	774.44	0.59	0.18
8:45:25 PM	232		776.78	0.65	0.20	774.45	0.58	0.18
8:50:25 PM	237		776.77	0.66	0.20	774.46	0.57	0.18
8:55:25 PM	242		776.77	0.66	0.20	774.46	0.57	0.17

**Construction and testing of the Edina OPCJ Test Well**  
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Time	Cumulative Time (pump test)	Cumulative Time (recovery test)	Edina OPCJ Test Well			Meadowbrook Golf Course Well		
			Water Elevation	Drawdown	Drawdown	Water Elevation	Drawdown	Drawdown
	[min]	[min]	[feet]	[feet]	[meters]	[feet]	[feet]	[meters]
9:00:25 PM	247		776.76	0.67	0.21	774.47	0.56	0.17
9:05:25 PM	252		776.75	0.68	0.21	774.47	0.56	0.17
9:10:25 PM	257		776.74	0.69	0.21	774.48	0.55	0.17
9:15:25 PM	262		776.74	0.69	0.21	774.48	0.55	0.17
9:20:25 PM	267		776.77	0.66	0.20	774.49	0.54	0.17
9:25:25 PM	272		776.73	0.70	0.21	774.49	0.54	0.16
9:30:25 PM	277		776.72	0.71	0.22	774.50	0.53	0.16
9:35:25 PM	282		776.72	0.71	0.22	774.51	0.52	0.16
9:40:25 PM	287		776.71	0.72	0.22	774.51	0.52	0.16
9:45:25 PM	292		776.72	0.71	0.22	774.52	0.51	0.16
9:50:25 PM	297		776.71	0.72	0.22	774.52	0.51	0.15
9:55:25 PM	302		776.70	0.73	0.22	774.53	0.50	0.15
10:00:25 PM	307		776.69	0.75	0.23	774.53	0.50	0.15
10:05:25 PM	312		776.68	0.75	0.23	774.54	0.49	0.15
10:10:25 PM	317		776.68	0.75	0.23	774.54	0.49	0.15
10:15:25 PM	322		776.67	0.76	0.23	774.53	0.50	0.15
10:20:25 PM	327		776.66	0.77	0.24	774.51	0.52	0.16
10:25:25 PM	332		776.62	0.81	0.25	774.49	0.54	0.17
10:30:25 PM	337		776.58	0.85	0.26	774.47	0.56	0.17
10:35:25 PM	342		776.55	0.88	0.27	774.45	0.58	0.18
10:40:25 PM	347		776.50	0.93	0.28	774.43	0.61	0.18
10:45:25 PM	352		776.48	0.95	0.29	774.41	0.62	0.19
10:50:25 PM	357		776.41	1.02	0.31	774.39	0.64	0.19
10:55:25 PM	362		776.36	1.07	0.33	774.38	0.65	0.20
11:00:25 PM	367		776.32	1.11	0.34	774.36	0.67	0.20
11:05:25 PM	372		776.27	1.16	0.35	774.35	0.68	0.21
11:10:25 PM	377		776.21	1.22	0.37	774.33	0.70	0.21
11:15:25 PM	382		776.17	1.26	0.39	774.32	0.71	0.22
11:20:25 PM	387		776.10	1.33	0.41	774.30	0.73	0.22
11:25:25 PM	392		776.05	1.38	0.42	774.29	0.75	0.23
11:30:25 PM	397		776.02	1.41	0.43	774.27	0.76	0.23
11:35:25 PM	402		775.97	1.46	0.44	774.25	0.78	0.24
11:40:25 PM	407		775.89	1.54	0.47	774.23	0.80	0.24
11:45:25 PM	412		775.86	1.57	0.48	774.22	0.81	0.25
11:50:25 PM	417		775.80	1.63	0.50	774.20	0.83	0.25
11:55:25 PM	422		775.79	1.64	0.50	774.18	0.85	0.26
12:00:25 AM	427		775.75	1.68	0.51	774.17	0.86	0.26
12:05:25 AM	432		775.70	1.73	0.53	774.15	0.88	0.27
12:10:25 AM	437		775.68	1.75	0.53	774.13	0.90	0.27
12:15:25 AM	442		775.63	1.80	0.55	774.10	0.93	0.28
12:20:25 AM	447		775.59	1.84	0.56	774.08	0.95	0.29
12:25:25 AM	452		775.56	1.87	0.57	774.06	0.97	0.30
12:30:25 AM	457		775.54	1.89	0.58	774.04	0.99	0.30
12:35:25 AM	462		775.49	1.94	0.59	774.01	1.02	0.31
12:40:25 AM	467		775.46	1.97	0.60	774.00	1.03	0.31
12:45:25 AM	472		775.45	1.98	0.60	773.97	1.06	0.32
12:50:25 AM	477		775.39	2.04	0.62	773.96	1.07	0.33
12:55:25 AM	482		775.37	2.06	0.63	773.93	1.10	0.33
1:00:25 AM	487		775.33	2.10	0.64	773.91	1.12	0.34

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Time	Cumulative Time (pump test)	Cumulative Time (recovery test)	Edina OPCJ Test Well			Meadowbrook Golf Course Well		
			Water Elevation	Drawdown	Drawdown	Water Elevation	Drawdown	Drawdown
	[min]	[min]	[feet]	[feet]	[meters]	[feet]	[feet]	[meters]
1:05:25 AM	492		775.30	2.13	0.65	773.89	1.14	0.35
1:10:25 AM	497		775.28	2.15	0.66	773.87	1.16	0.35
1:15:25 AM	502		775.25	2.18	0.66	773.85	1.18	0.36
1:20:25 AM	507		775.23	2.20	0.67	773.83	1.20	0.37
1:25:25 AM	512		775.19	2.24	0.68	773.81	1.22	0.37
1:30:25 AM	517		775.14	2.29	0.70	773.79	1.24	0.38
1:35:25 AM	522		775.13	2.30	0.70	773.78	1.25	0.38
1:40:25 AM	527		775.11	2.32	0.71	773.75	1.28	0.39
1:45:25 AM	532		775.08	2.35	0.72	773.73	1.30	0.40
1:50:25 AM	537		775.07	2.36	0.72	773.72	1.31	0.40
1:55:25 AM	542		775.05	2.38	0.72	773.71	1.32	0.40
2:00:25 AM	547		775.04	2.39	0.73	773.70	1.33	0.41
2:05:25 AM	552		775.01	2.42	0.74	773.69	1.34	0.41
2:10:25 AM	557		775.02	2.41	0.74	773.70	1.33	0.41
2:15:25 AM	562		775.02	2.41	0.73	773.71	1.32	0.40
2:20:25 AM	567		775.00	2.43	0.74	773.72	1.31	0.40
2:25:25 AM	572		775.00	2.43	0.74	773.72	1.31	0.40
2:30:25 AM	577		775.00	2.43	0.74	773.72	1.31	0.40
2:35:25 AM	582		775.02	2.41	0.74	773.72	1.31	0.40
2:40:25 AM	587		775.02	2.41	0.73	773.71	1.32	0.40
2:45:25 AM	592		775.02	2.41	0.74	773.72	1.31	0.40
2:50:25 AM	597		775.02	2.41	0.73	773.71	1.32	0.40
2:55:25 AM	602		775.03	2.40	0.73	773.71	1.32	0.40
3:00:25 AM	607		775.01	2.42	0.74	773.71	1.32	0.40
3:05:25 AM	612		775.02	2.41	0.74	773.71	1.32	0.40
3:10:25 AM	617		775.01	2.42	0.74	773.70	1.33	0.40
3:15:25 AM	622		775.00	2.43	0.74	773.69	1.34	0.41
3:20:25 AM	627		775.00	2.43	0.74	773.70	1.33	0.41
3:25:25 AM	632		774.99	2.44	0.74	773.68	1.35	0.41
3:30:25 AM	637		774.99	2.44	0.74	773.68	1.35	0.41
3:35:25 AM	642		774.99	2.44	0.74	773.67	1.36	0.41
3:40:25 AM	647		774.97	2.46	0.75	773.66	1.37	0.42
3:45:25 AM	652		774.94	2.49	0.76	773.67	1.36	0.42
3:50:25 AM	657		774.94	2.49	0.76	773.66	1.38	0.42
3:55:25 AM	662		774.93	2.50	0.76	773.65	1.38	0.42
4:00:25 AM	667		774.92	2.51	0.76	773.65	1.38	0.42
4:05:25 AM	672		774.89	2.54	0.77	773.64	1.39	0.42
4:10:25 AM	677		774.85	2.58	0.79	773.64	1.39	0.42
4:15:25 AM	682		774.86	2.57	0.78	773.64	1.39	0.42
4:20:25 AM	687		774.86	2.57	0.78	773.64	1.39	0.42
4:25:25 AM	692		774.82	2.61	0.80	773.63	1.40	0.43
4:30:25 AM	697		774.80	2.63	0.80	773.62	1.41	0.43
4:35:25 AM	702		774.78	2.65	0.81	773.61	1.42	0.43
4:40:25 AM	707		774.78	2.65	0.81	773.61	1.42	0.43
4:45:25 AM	712		774.75	2.68	0.82	773.60	1.43	0.44
4:50:25 AM	717		774.75	2.68	0.82	773.59	1.44	0.44
4:55:25 AM	722	2	774.71	2.72	0.83	773.58	1.45	0.44
5:00:25 AM	727	7	774.71	2.72	0.83	773.57	1.46	0.44
5:05:25 AM	732	12	774.71	2.72	0.83	773.56	1.47	0.45

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Time	Cumulative Time (pump test)	Cumulative Time (recovery test)	Edina OPCJ Test Well			Meadowbrook Golf Course Well		
			Water Elevation	Drawdown	Drawdown	Water Elevation	Drawdown	Drawdown
	[min]	[min]	[feet]	[feet]	[meters]	[feet]	[feet]	[meters]
5:10:25 AM	737	17	774.70	2.73	0.83	773.56	1.47	0.45
5:15:25 AM	742	22	774.68	2.75	0.84	773.57	1.46	0.44
5:20:25 AM	747	27	774.69	2.74	0.84	773.58	1.45	0.44
5:25:25 AM	752	32	774.69	2.74	0.83	773.61	1.42	0.43
5:30:25 AM	757	37	774.70	2.73	0.83	773.63	1.40	0.43
5:35:25 AM	762	42	774.72	2.71	0.83	773.66	1.37	0.42
5:40:25 AM	767	47	774.75	2.68	0.82	773.69	1.35	0.41
5:45:25 AM	772	52	774.75	2.68	0.82	773.72	1.31	0.40
5:50:25 AM	777	57	774.76	2.67	0.81	773.76	1.27	0.39
5:55:25 AM	782	62	774.80	2.63	0.80	773.79	1.24	0.38
6:00:25 AM	787	67	774.83	2.60	0.79	773.84	1.19	0.36
6:05:25 AM	792	72	774.83	2.60	0.79	773.88	1.15	0.35
6:10:25 AM	797	77	774.87	2.56	0.78	773.93	1.10	0.34
6:15:25 AM	802	82	774.90	2.53	0.77	773.97	1.06	0.32
6:20:25 AM	807	87	774.92	2.51	0.77	774.01	1.02	0.31
6:25:25 AM	812	92	774.93	2.50	0.76	774.06	0.97	0.30
6:30:25 AM	817	97	774.98	2.45	0.75	774.10	0.93	0.28
6:35:25 AM	822	102	775.01	2.42	0.74	774.14	0.89	0.27
6:40:25 AM	827	107	775.04	2.39	0.73	774.17	0.86	0.26
6:45:25 AM	832	112	775.03	2.40	0.73	774.20	0.83	0.25
6:50:25 AM	837	117	775.06	2.37	0.72	774.23	0.80	0.24
6:55:25 AM	842	122	775.09	2.34	0.71	774.27	0.76	0.23
7:00:25 AM	847	127	775.09	2.34	0.71	774.30	0.73	0.22
7:05:25 AM	852	132	775.11	2.32	0.71	774.34	0.69	0.21
7:10:25 AM	857	137	775.12	2.31	0.70	774.37	0.66	0.20
7:15:25 AM	862	142	775.15	2.28	0.70	774.40	0.63	0.19
7:20:25 AM	867	147	775.15	2.28	0.70	774.44	0.59	0.18
7:25:25 AM	872	152	775.17	2.26	0.69	774.47	0.56	0.17
7:30:25 AM	877	157	775.17	2.26	0.69	774.50	0.53	0.16
7:35:25 AM	882	162	775.18	2.25	0.68	774.53	0.50	0.15
7:40:25 AM	887	167	775.21	2.22	0.68	774.56	0.47	0.14
7:45:25 AM	892	172	775.20	2.23	0.68	774.59	0.44	0.13
7:50:25 AM	897	177	775.20	2.23	0.68	774.62	0.41	0.12
7:55:25 AM	902	182	775.22	2.21	0.67	774.65	0.38	0.12
8:00:25 AM	907	187	775.25	2.18	0.66	774.68	0.36	0.11
8:05:25 AM	912	192	775.26	2.17	0.66	774.71	0.32	0.10
8:10:25 AM	917	197	775.28	2.15	0.66	774.73	0.30	0.09
8:15:25 AM	922	202	775.27	2.16	0.66	774.76	0.27	0.08
8:20:25 AM	927	207	775.29	2.14	0.65	774.79	0.24	0.07
8:25:25 AM	932	212	775.31	2.12	0.65	774.82	0.21	0.07
8:30:25 AM	937	217	775.29	2.14	0.65	774.84	0.19	0.06
8:35:25 AM	942	222	775.32	2.11	0.64	774.87	0.16	0.05
8:40:25 AM	947	227	775.33	2.10	0.64	774.89	0.14	0.04
8:45:25 AM	952	232	775.36	2.07	0.63	774.91	0.12	0.04
8:50:25 AM	957	237	775.36	2.07	0.63	774.94	0.10	0.03
8:55:25 AM	962	242	775.35	2.08	0.63	774.96	0.07	0.02
9:00:25 AM	967	247	775.37	2.06	0.63	774.98	0.05	0.02

THEIS'S RECOVERY METHOD OF ANALYSING AQUIFER TEST DATA

STS Consultants, Ltd, December 2004

"Theis Recovery 1.xls" spreadsheet by Piotr Rzepecki

Source: Kruseman & Verweij, 1991, pp. 194-196

TIME [min]	t [day]	t' [day]	u/t' [-]	corr. dd. (aq. dew.) [ft]	corr. dd. (atm. press.) [m]	Log(t/t')	Regr. Line	Project : Edina OPCJ Test Well, STS 20060503; File name: Theis Recovery 1 - ED15.xls
2	0.50	0.00	362.00		0.44	2.56	1.78	Analyst : P. Rzepecki
7	0.51	0.00	104.14		0.44	2.02	1.30	Test Date : 6 / 21-22 / 2007
12	0.51	0.01	61.17		0.45	1.79	1.09	Well : ED15 pumping, Meadowbrook Well Data
17	0.51	0.01	43.47		0.45	1.64	0.95	t of Pump Test : 0.50 [day]
22	0.52	0.02	33.82		0.44	1.53	0.86	Q : 5178.00 [m <sup>3</sup> /day]
27	0.52	0.02	27.74		0.44	1.44	0.78	D : 67 [m]
32	0.52	0.02	23.56		0.43	1.37	0.71	delta s : 0.90 [m/log cycle]
37	0.53	0.03	20.51		0.43	1.31	0.66	KD : 1053.02 [m <sup>2</sup> /day]
42	0.53	0.03	18.19		0.42	1.26	0.61	7.9E+00 [ft <sup>2</sup> /min]
47	0.53	0.03	16.36		0.41	1.21	0.57	84798 [gpd/ft] K : 1.8E-02 [cm/sec]
52	0.54	0.04	14.88		0.40	1.17	0.54	Regression Line Fitting:
57	0.54	0.04	13.67		0.39	1.14	0.50	Constant -0.52
62	0.54	0.04	12.65		0.38	1.10	0.47	X Coefficient(s) 0.9
67	0.55	0.05	11.78		0.36	1.07	0.44	
72	0.55	0.05	11.03		0.35	1.04	0.42	
77	0.55	0.05	10.38		0.34	1.02	0.39	
82	0.56	0.06	9.80		0.32	0.99	0.37	
87	0.56	0.06	9.30		0.31	0.97	0.35	
92	0.57	0.06	8.85		0.30	0.95	0.33	
97	0.57	0.07	8.44		0.28	0.93	0.31	
102	0.57	0.07	8.08		0.27	0.91	0.30	
107	0.58	0.07	7.75		0.26	0.89	0.28	
112	0.58	0.08	7.45		0.25	0.87	0.26	
117	0.58	0.08	7.17		0.24	0.86	0.25	
122	0.59	0.08	6.92		0.23	0.84	0.24	
127	0.59	0.09	6.69		0.22	0.83	0.22	
132	0.59	0.09	6.47		0.21	0.81	0.21	
137	0.60	0.10	6.27		0.20	0.80	0.20	
142	0.60	0.10	6.08		0.19	0.78	0.19	
147	0.60	0.10	5.91		0.18	0.77	0.17	
152	0.61	0.11	5.75		0.17	0.76	0.16	
157	0.61	0.11	5.60		0.16	0.75	0.15	
162	0.61	0.11	5.46		0.15	0.74	0.14	
167	0.62	0.12	5.32		0.14	0.73	0.13	
172	0.62	0.12	5.20		0.13	0.72	0.12	
177	0.62	0.12	5.08		0.12	0.71	0.12	
182	0.63	0.13	4.97		0.12	0.70	0.11	
187	0.63	0.13	4.86		0.11	0.69	0.10	
192	0.63	0.13	4.76		0.10	0.68	0.09	
197	0.64	0.14	4.66		0.09	0.67	0.08	
202	0.64	0.14	4.57		0.08	0.66	0.07	
207	0.65	0.14	4.49		0.07	0.65	0.07	
212	0.65	0.15	4.41		0.07	0.64	0.06	
217	0.65	0.15	4.33		0.06	0.64	0.05	
222	0.66	0.15	4.25		0.05	0.63	0.05	
227	0.66	0.16	4.18		0.04	0.62	0.04	
232	0.66	0.16	4.11		0.04	0.61	0.03	
237	0.67	0.16	4.05		0.03	0.61	0.03	
242	0.67	0.17	3.98		0.02	0.60	0.02	
247	0.67	0.17	3.92		0.02	0.59	0.01	

THEIS'S RECOVERY METHOD OF ANALYSING AQUIFER TEST DATA

STS Consultants, Ltd, December 2004

"Theis Recovery 1.xls" spreadsheet by Piotr Rzepecki

Source: Kruseman & Verweij, 1991, pp. 194-196

TIME [min]	t [day]	t' [day]	t/t' [-]	corr. dd. (aq. dew.) (s) [ft]	corr. dd. (atm. press.) (s') [m]	Log(t/t')	Regr. Line
2	0.50	0.00	362.00		0.83	2.56	1.32
7	0.51	0.00	104.14		0.83	2.02	1.13
12	0.51	0.01	61.17		0.83	1.79	1.05
17	0.51	0.01	43.47		0.83	1.64	1.00
22	0.52	0.02	33.82		0.84	1.53	0.96
27	0.52	0.02	27.74		0.84	1.44	0.93
32	0.52	0.02	23.56		0.83	1.37	0.90
37	0.53	0.03	20.51		0.83	1.31	0.88
42	0.53	0.03	18.19		0.83	1.26	0.87
47	0.53	0.03	16.36		0.82	1.21	0.85
52	0.54	0.04	14.88		0.82	1.17	0.84
57	0.54	0.04	13.67		0.81	1.14	0.82
62	0.54	0.04	12.65		0.80	1.10	0.81
67	0.55	0.05	11.78		0.79	1.07	0.80
72	0.55	0.05	11.03		0.79	1.04	0.79
77	0.55	0.05	10.38		0.78	1.02	0.78
82	0.56	0.06	9.80		0.77	0.99	0.77
87	0.56	0.06	9.30		0.77	0.97	0.76
92	0.57	0.06	8.85		0.76	0.95	0.76
97	0.57	0.07	8.44		0.75	0.93	0.75
102	0.57	0.07	8.08		0.74	0.91	0.74
107	0.58	0.07	7.75		0.73	0.89	0.74
112	0.58	0.08	7.45		0.73	0.87	0.73
117	0.58	0.08	7.17		0.72	0.86	0.72
122	0.59	0.08	6.92		0.71	0.84	0.72
127	0.59	0.09	6.69		0.71	0.83	0.71
132	0.59	0.09	6.47		0.71	0.81	0.71
137	0.60	0.10	6.27		0.70	0.80	0.70
142	0.60	0.10	6.08		0.70	0.78	0.70
147	0.60	0.10	5.91		0.70	0.77	0.70
152	0.61	0.11	5.75		0.69	0.76	0.69
157	0.61	0.11	5.60		0.69	0.75	0.69
162	0.61	0.11	5.46		0.68	0.74	0.68
167	0.62	0.12	5.32		0.68	0.73	0.68
172	0.62	0.12	5.20		0.68	0.72	0.68
177	0.62	0.12	5.08		0.68	0.71	0.67
182	0.63	0.13	4.97		0.67	0.70	0.67
187	0.63	0.13	4.86		0.66	0.69	0.67
192	0.63	0.13	4.76		0.66	0.68	0.66
197	0.64	0.14	4.66		0.66	0.67	0.66
202	0.64	0.14	4.57		0.66	0.66	0.66
207	0.65	0.14	4.49		0.65	0.65	0.65
212	0.65	0.15	4.41		0.65	0.64	0.65
217	0.65	0.15	4.33		0.65	0.64	0.65
222	0.66	0.15	4.25		0.64	0.63	0.65
227	0.66	0.16	4.18		0.64	0.62	0.64
232	0.66	0.16	4.11		0.63	0.61	0.64
237	0.67	0.16	4.05		0.63	0.61	0.64
242	0.67	0.17	3.98		0.63	0.60	0.64
247	0.67	0.17	3.92		0.63	0.59	0.63

Project : Edina OPCJ Test Well, STS 20060503; File name: Theis Recovery 1.- ED15.xls

Analyst : P. Rzepecki

Test Date : 6 / 21-22 / 2007

Well : ED15 pumping, Edina OPCJ Test Well Data

t of Pump Test : 0.50 [day]

Q : 5178.00 [m<sup>3</sup>/day]

D : 67 [m]

delta s' : 0.35 [m/log cycle]

KD : 2723.33 [m<sup>2</sup>/day]

2.0E+01 [ft<sup>2</sup>/min]

219306 [gpd/ft] K : 4.7E-02 [cm/sec]

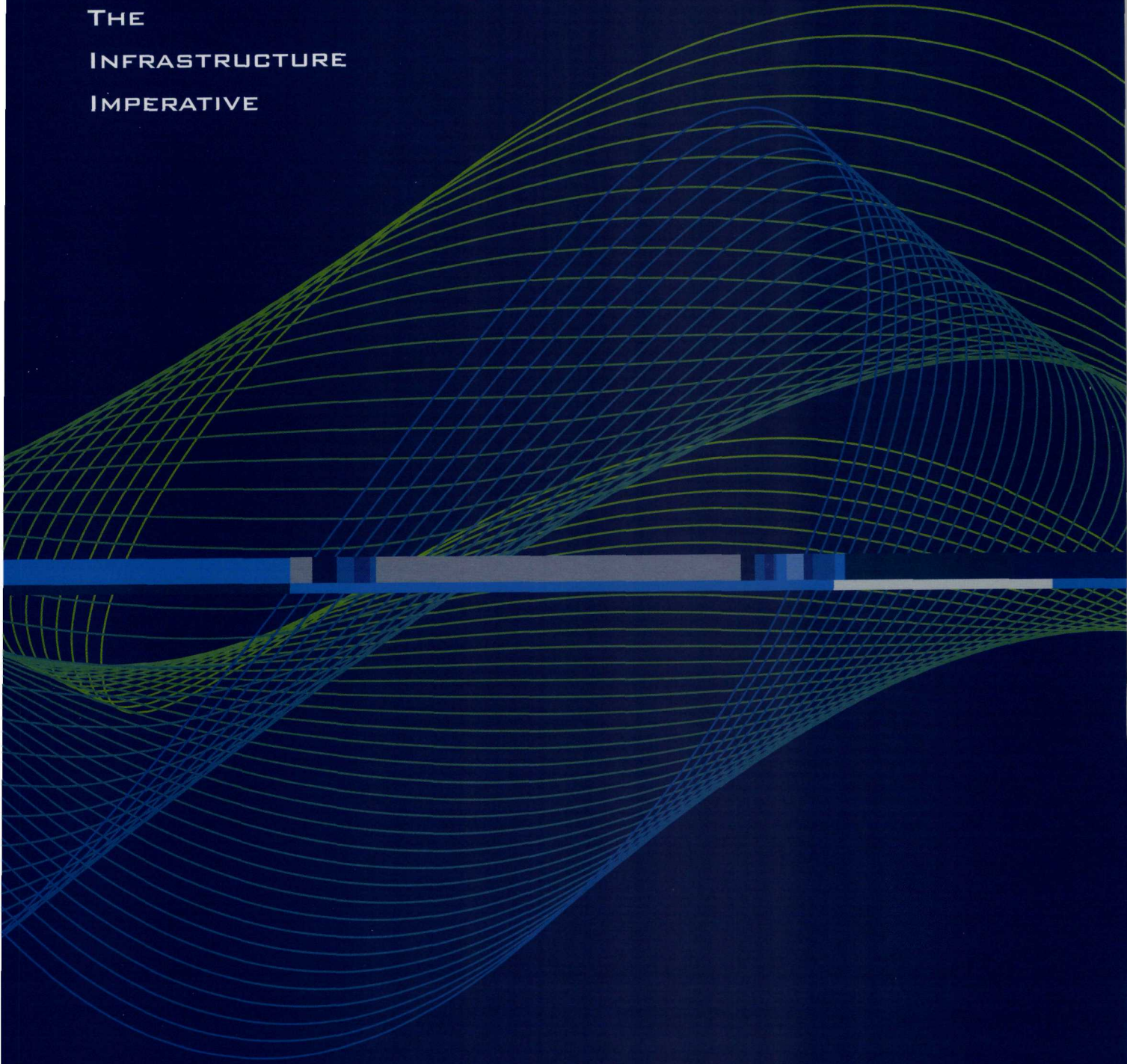
Regression Line Fitting:

Constant 0.427

X Coefficient(s) 0.348



THE  
INFRASTRUCTURE  
IMPERATIVE



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## PHOTOGRAPHIC LOG

**Client Name:** Minnesota  
**Pollution Control Agency**

**Site Location:** Edina, Minnesota

**Project No.** 200605032

**Photo No.**  
1

**Date:**  
06/05/  
2007

**Direction Photo  
Taken:**

View to the west

**Description:**

The Edina OPCJ  
Test Well – view  
toward the west.  
Dundee Avenue on  
the right



**Photo No.**  
2

**Date:**  
06/06/  
2007

**Direction Photo  
Taken:**

**Description:**

The view of the Edina  
OPCJ Test Well's  
protective Casing and  
the modified well  
casing's cap. That  
modified cap allows  
installation of the  
transducer.

